TECHNOLOGY DEPT.

FLIGHT

MAGAZINE

APRIL 1955
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Vol 43
#4

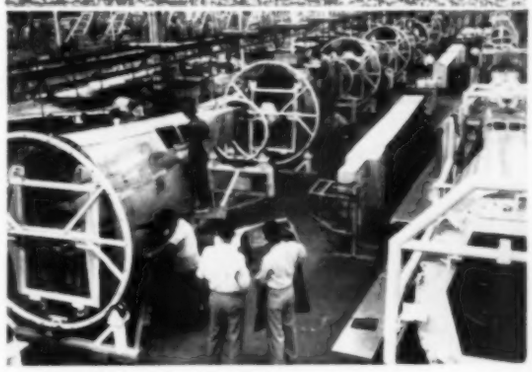
Associated Explorer For Uranium Operations

(See page 16)

Still another weapon from the spirit world . . .

McDONNELL SPEEDS ***DEMON*** PRODUCTION WITH A SUB-CONTRACT TO **TEMCO.**

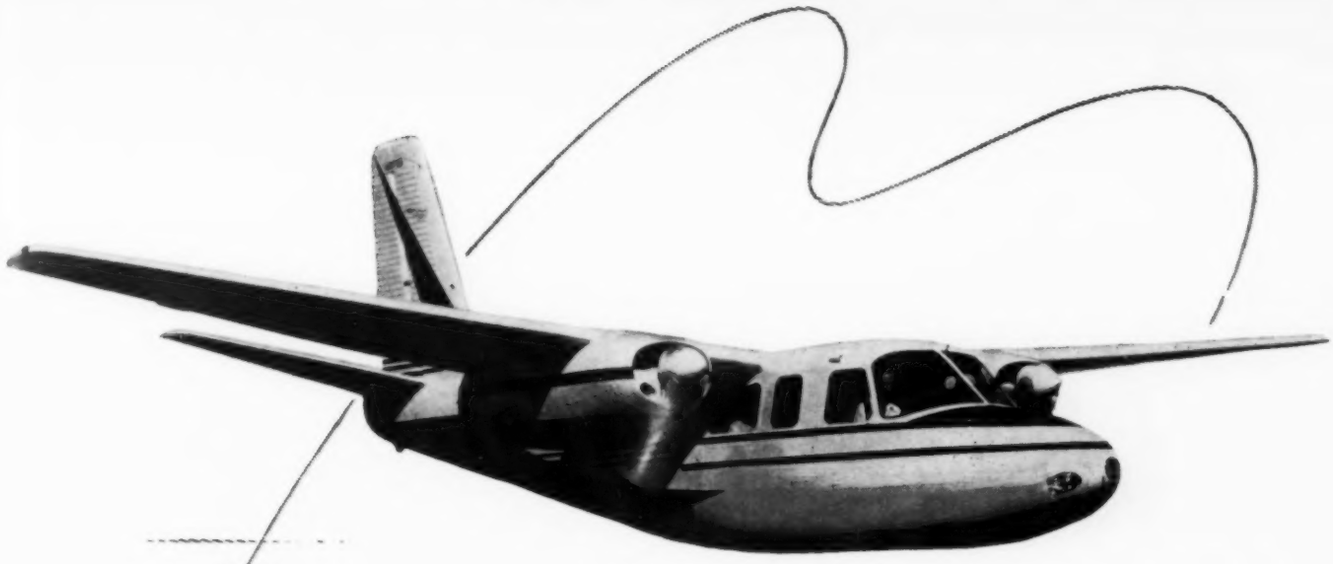
First the *Phantom*, then the *Banshee*, now the *Demon* — and soon the *Voodoo*. If the names of McDonnell's sleek fighters aren't enough to haunt aggressors' dreams, their performance certainly will. The Navy, with twin-jet Banshee squadrons already in operation, saw the new F3H *Demon* design . . . liked it . . . wanted some quick. McDonnell sped the job by sharing the responsibility with TEMCO, giving sub-contracts for aft fuselages, inner and outer wings, flaps, and other components totaling 35 per cent of the airframe. McDonnell thus joined Boeing, Convair, Lockheed, Martin, and Republic — all of whom have found that TEMCO delivers a quality product, on schedule, at the lowest possible cost.



F3H aft fuselage sections on rotating circular jigs move down TEMCO-Dallas assembly lines. Elsewhere in the Dallas plant, a twin line is devoted to inner wings, while outer wings take shape at TEMCO's Garland plant.

ENGINEERS . . . If you are interested in a position with a *growing weapon systems organization*, write full particulars to E. J. Horton, Jr., Engineering Personnel, TEMCO Aircraft Corporation, P. O. Box 6191, Dallas 2, Texas.

TEMCO
AIRCRAFT CORPORATION
DALLAS, TEXAS



MENTAL COMFORT

in the AERO COMMANDER 560

CLARENCE L. LANDEN
PRESIDENT
SECURITIES ACCEPTANCE CORPORATION
OMAHA, NEBRASKA

"I have a feeling of security in our Aero Commander which I have never enjoyed in any other plane."

Clarence L. Landen

CLARENCE L. LANDEN

Securities Acceptance Corporation operates forty-six branch offices in nine states. President Clarence L. Landen is another leading American executive who employs the use of business aircraft to maintain close management contact with wide-spread company operations.

WRITE
DEPT. 121
FOR NEW
CATALOGUE

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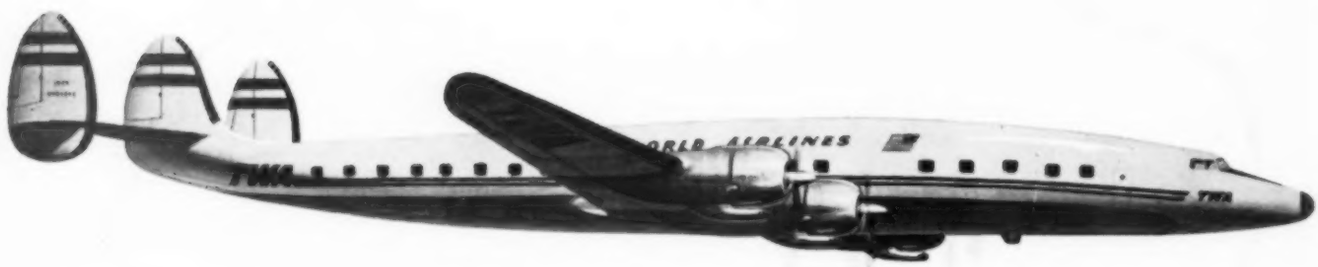

as a tribute to TWA's great new SUPER-G CONSTELLATIONS

In April, Trans World Airlines inaugurates coast-to-coast non-stop flights, in both directions, between New York and Los Angeles, with their new Super-G Constellations.

TWA's great new Super-G Constellations —large, powerful, luxurious—were created by Lockheed especially for TWA, and were styled by Henry Dreyfuss, the world-famous designer. The planes are powered by Curtiss-Wright's newest Turbo-compound engines. These magnificent new Super-G Constellations will provide the only air sleeper service between New York and California.

Phillips is proud to supply Phillips *66* aviation gasoline to Trans World Airlines. Throughout the marketing area served by Phillips *66*, TWA and other major air lines use reliable Phillips *66* aviation products. Operators know they can always depend on Phillips *66* quality.

It's Performance That Counts

AVIATION DIVISION
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Phillips 66
AVIATION PRODUCTS

NON-STOP FLIGHT ACROSS SOUTH ATLANTIC OCEAN was made last month in this Piper Apache by W. T. Piper, Jr. (left) and Howard Piper (right), sons of Manufacturer W. T. Piper (center). They delivered the Apache to Placo Aircraft Sales, Ltd., Wonderboom Airport, Pretoria, South Africa. Longest hop on 12,500-mile delivery trip was 1,860 miles from Natal, Brazil, to Monrovia, Africa. Plane carried 200 gals. of auxiliary fuel, giving it 2,700-mi. range. Apache is powered by two 150-hp. Lycomings. Six more Apaches will be flown to South Africa this summer plus several others to Europe. Two European deliveries have already been flown, one non-stop from New York to Paris.

—(Piper Photo.)

AIR Report

Significant Trends and News

CHAMPION AIRCRAFT CORPORATION, Holman Field, St. Paul, Minnesota, is turning out one 90-hp. 2-pl. Champion per week and expects to boost this to one airplane per working day this summer. Four Champions have already been delivered. The firm purchased production rights to the aircraft from Aeronca Aircraft in June, 1954. Price of the Model 7-EC Champion is $3,795. The 90-hp., tandem-seat Champion has a 775-lb. useful load at 1,450-lb. gross weight and an advertised cruising speed of 105 mph. Open house was held last month to mark production of the first airplane and speakers included Governor Freeman.

HELIOPLANE PRODUCTION has been started at Pittsburg, Kansas, by Mid-State Manufacturing Corp., under a production contract with Helio Aircraft Corp., Norwood, Mass., which retains all rights to the airplane. Priced at $24,500, the all-metal, 4-pl. Helioplane features the use of high-lift devices for short-field performance including take-off and landing, with 4 occupants, over a 50-ft. obstacle in only 165 yards. Speed range is just over 5 to 1, being from 30 mph. for minimum controllable level flight to 157 mph. for optimum cruise at 8,500 ft. using 72% power, according to the manufacturer. It is powered by a 260-hp. Lycoming engine, has 60-gal. fuel capacity for 600-mi. range, and is described as having a 920-lb. useful load at a certificated gross of 2,800 lbs. Certification will be sought for a 3,000-lb. gross which would give it a 1,120-lb. useful load. Under CAR Part 08 covering agricultural or industrial flying, useful load of 1,620 lbs. is claimed when flown with crew and cargo only.

NEW HIGH-PERFORMANCE CHANCE VOUGHT F8U DAY

(Continued on next page)

FLIGHT MAGAZINE

Including SOUTHERN FLIGHT and MODERN AIRPORTS

APRIL, 1955 VOL 43. No. 4

COVER: Posed for our cover picture is the Associated Explorer, a 450-hp. lightplane grossing 4,440 lbs. and having a 2,000-lb. useful load. It is completely equipped with all the essentials not only for the aerial detection of uranium ore bodies but to land on the spot, core-drill the ore and analyze it. Portable drilling rig is shown with the Explorer. For details of this powerful, slow-flying, short-landing workhorse, see page 16.

—(FLIGHT MAGAZINE Photo by Jep White.)

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Just Among Ourselves—EDITORIALS: A SIGNIFICANT OVERHAUL CONTRACT; THE TACAN FIGHT; PILOTS ASSOCIATION; SOMEONE'S ON HOP; STANDARD INSURANCE RATES; HONORS TO W. C. OCKER 13

The Associated Explorer—BY GEORGE E. HADDAWAY—URANIUM HUNTING WITH SURPLUS POWER, HEAVY PAYLOAD, SLOW FLYING AND SHORT LANDING AND TAKE-OFF . . . 16

Bell's Uranium Project—MANUFACTURER WILL PROVE HELICOPTER'S USEFULNESS TO DEVELOP SALES IN URANIUM COUNTRY 19

Small Jet for Speed and Altitude—INTERESTING PERFORMANCE DETAILS ON THE TWIN-JET FOUGA TRAINER 20

Light Vertical Riser—EXPERIMENTAL FIXED-WING RELIES ON JET THRUST 22

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Low-Cost Radio Aids—DETAILS OF THE AEROTRON VHF TRANSMITTER AND THE ELECTRONIC DIRECTION FINDER . . 36

Questions and Answers for Operators - - - - - . 46

GEORGE E. HADDAWAY, Editor-Publisher; TOM ASHLEY, Managing Editor; FRED N. STONES, JR., Business Manager, P. O. Box 750 (1901 McKinney Ave.), Dallas, Texas—Telephone STerling 2125.

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CHECKS ACCURACY OF JET ENGINE R.P.M. and E.G.T. SYSTEMS

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● Of the many factors affecting jet engine life, efficiency, and safe operation, two of the most important are *Exhaust Gas Temperature* (EGT) and *Engine Speed* (RPM). Excess heat will reduce "bucket" life as much as 50% and low EGT materially reduces efficiency and thrust. Any of such conditions will make operation of the aircraft both costly and dangerous. The JETCAL Analyzer predetermines accuracy of the EGT and Tachometer systems and isolates errors if they exist.

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2) Checks individual thermocouples "on the bench" before placement in parallel harness.

3) Checks thermocouples within the harness for continuity.

4) Checks thermocouples *and* paralleling harness for accuracy.

5) Checks resistance of the EGT circuit *without the EGT Indicator.*

6) Checks insulation of the EGT circuit for shorts to ground and for shorts between leads.

7) Checks EGT Indicators (in or out of aircraft).

8) Checks EGT system with engine removed from aircraft (in production line or overhaul shop).

9 Checks aircraft TACHOMETER system accuracy to within ±0.2% between 95% to 100% RPM.

10) JETCAL ANALYZER enables engine adjustment to proper relationship between engine temperature and engine RPM for maximum thrust and efficiency during engine run. (Tabbing or Micing).

ALSO *functionally checks* aircraft thermal switches (OVERHEAT DETECTORS and WING ANTI-ICE systems) by using *TEMPCAL* Probes.

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FIGHTER for the Navy was to make its first flight by early April. It is in production at Dallas.

PRESSURIZED EXECUTIVE VERSION OF DOUGLAS B-26 is proposed by Pan American World Airways' Customer Base at Brownsville, Texas. It would have a new 10-place transport-type fuselage and two Pratt & Whitney R-2800-CB17 engines but use the same wings as the B-26. Financing is being sought for the project.

FLIGHT TESTS OF THE ROBERTSON SKYLARK SRX-1, high-performance 5-place, all-metal liaison-type experimental, are being conducted at Ft. Worth and the Robertson Development Corporation, which designed and built it, is in the process of moving to Ft. Worth from St.

Airmen's Calendar

April 16-20—American Association of Airport Executives Annual Convention, El Conquistador Hotel, Tucson, Arizona; Reservations and Exhibit Applications to be Addressed to the Executive Secretary, P. O. Box 1191, Tucson, Arizona.

April 18-21—SAE Golden Anniversary Aeronautic Meeting, New York.

April 24-28—8th Annual Airport Operators Council Meeting, Olympic Hotel, Seattle, Wash.

April 26—Massachusetts Aviation Conference, Beverly, Mass.

April 27-30—11th Annual American Helicopter Society Forum, Exhibits and Air Show, Washington, D. C.

April 28-29—Michigan Aero Conference, University of Michigan, Ann Arbor.

May 2-5—Society of Aeronautical Weight Engineers National Conference, Hilton Hotel, Ft. Worth.

May 3-5—First National Flight Test Instrumentation Symposium, Allis Hotel, Wichita, Kans.

May 4-6—4th International Aviation Trade Show, 69th Regiment Armory, New York.

May 6-7—National Intercollegiate Air Meet, Meacham Field, Ft. Worth.

May 7-8—Northeastern Intercollegiate Air Meet, Troy, N. Y.

June 4—6th Annual Reading Air Service Maintenance and Operations Meeting, Reading, Pa.

June 13-14—WNAA Skylady Derby, Little Rock, Ark., to Raton, N. M., $600 in prizes. Mrs. Ruth Nickell, 904 Nickell Road, Tulsa, is entry chairman.

June 9—6th All-Women's International Air Race, Washington, D. C., to Havana, Cuba. Entry chairman is Miss Dorothea Vermorel, Florida, Chapter of 99's, 1015 Olympic Building, Miami, Fla.

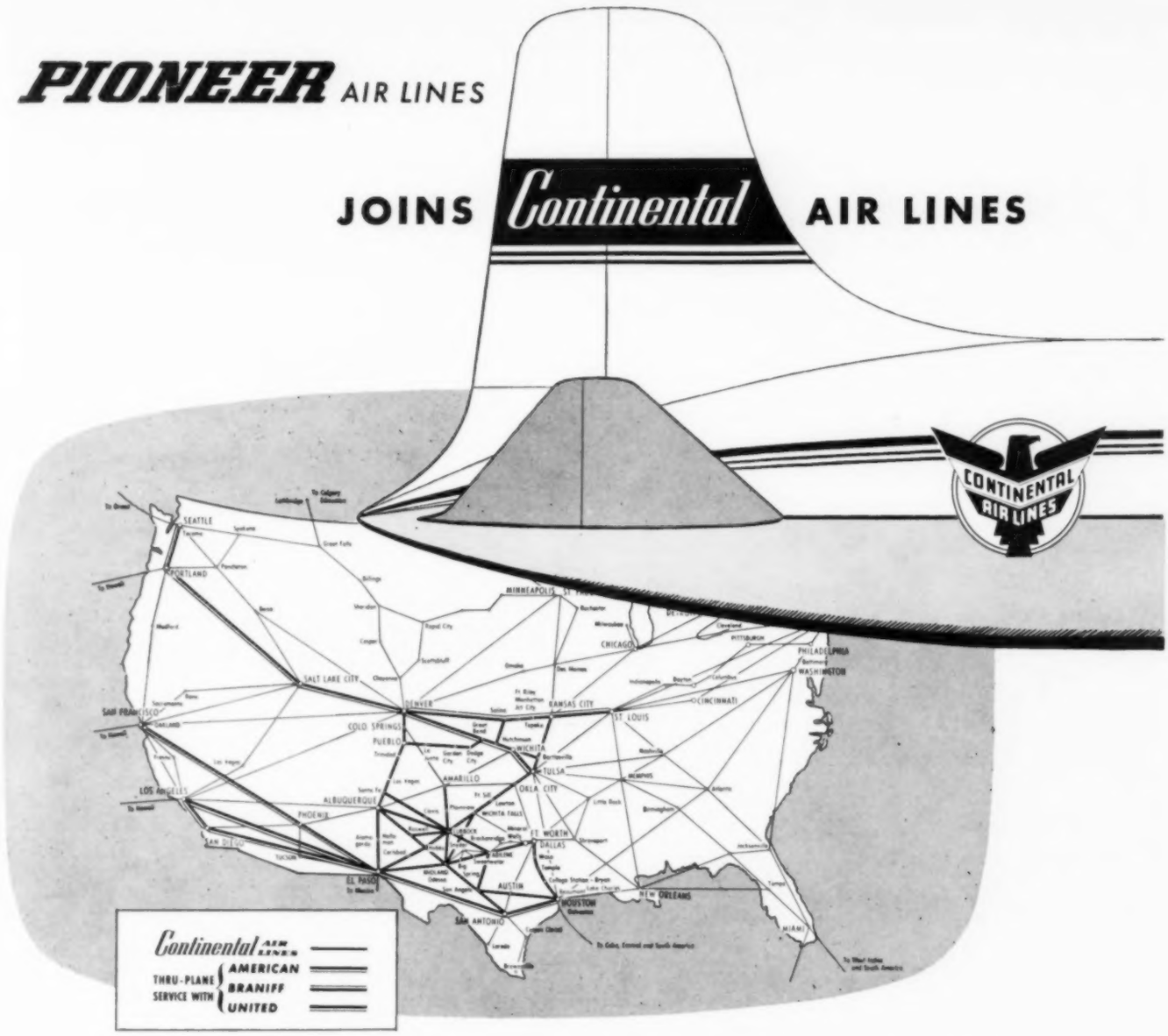
June 18-25—3rd Annual Transcontinental Air Cruise, Sponsored by Philadelphia Jaycees, Palm Springs to Philadelphia.

June 21-24—Mid-Year ADMA Meeting, Breezy Point Lodge, Brainerd, Minn.

July 2-6—9th Annual All-Woman Transcontinental Air Race, Long Beach, Calif., to Springfield, Mass., sponsored by the Ninety-Nines, Inc. Entry chairman is Mrs. Barbara London, 624 Armando Drive, Long Beach 7, Calif.

PIONEER AIR LINES

JOINS *Continental* **AIR LINES**



PROVIDING MORE FLIGHTS... MORE DIRECT SERVICE... BETWEEN MORE IMPORTANT SOUTHWEST CITIES THAN EVER BEFORE

On April 1, Pioneer Air Lines' 2000 route miles in Texas and New Mexico, become part of the greater Continental Air Lines system, resulting in the following expanded air service:

- **ONE PLANE, ONE-CARRIER SERVICE between EL PASO and AUSTIN**
- **FASTER SERVICE between DALLAS, FORT WORTH and ALBUQUERQUE**
- **ONE-PLANE, ONE-CARRIER SERVICE between DALLAS, FORT WORTH, ROSWELL, HOBBS and CARLSBAD**
- **MORE FREQUENT SERVICE between TULSA, OKLAHOMA CITY and ALBUQUERQUE**
- **ADDITIONAL FLIGHTS between OKLAHOMA CITY-TULSA and MIDLAND-ODESSA, LUBBOCK and WEST TEXAS POINTS**
- **ADDITIONAL SERVICE between HOUSTON, AUSTIN, MIDLAND-ODESSA**
- **NEW, ONE-PLANE, ONE-CARRIER SERVICE between HOUSTON, AUSTIN and ROSWELL, ALBUQUERQUE**
- **NEW ONE-PLANE SERVICE between SAN ANTONIO, LUBBOCK, AMARILLO**

PIONEER AIR LINES NOW BECOMES ***Continental AIR LINES***

NEW USE FOR LARGE HELICOPTERS is towing surface craft and equipment in the Navy, with tests indicating excellent results in towing devices for clearing mines from water. Photo above shows a Piasecki H-21 towing an 81-ft. Navy torpedo boat at an 11-knot speed. Photo at left shows a Bell HSL in static tests for a "flying tug."
—(Piasecki and Bell Photos.)

Joseph, Missouri, near St. Louis. The firm's new address of P. O. Box 866, Ft. Worth. Jim Robertson is president and Bob Ferguson is executive vice president, with Marion Cole of air circus fame in charge of flight test. Directors include Jack Frye, former president of TWA who recently resigned as president of General Aniline & Film Corp. The Skylark features high-lift devices for short-field operations.

FIRST USE OF TRANSISTORS IN AIRLINE AND EXECUTIVE AIRCRAFT will be in a new audio control panel being marketed by Bendix, first sale being 16 of the panels to KLM Airlines. Three types of switches are provided on the new panel, illuminated push buttons for transmitting, a rotary switch for filter selection and toggle switches for receiving.

NEW GYRO-STABILIZER FOR BUSINESS PLANES will be shipped to airframe manufacturers and distributors in April by Globe Industries, Inc., Dayton, Ohio. The Globe Gyro-Stabilizer is an automatic rudder control to keep the airplane in straight flight or in a controlled, stable turn. It is approved by CAA for the Cessna 170 and CAA approval tests are under way for its use in Cessna 180 and Piper Tri-Pacer aircraft. Price of $595 includes installation parts and templates, with installation possible by any certificated aircraft mechanic in 8 to 10 hrs. using ordinary shop tools and no special equipment. Globe Industries manufactures miniature electric motors, gyros and other aircraft

(Continued on page 32)

TRANSCENDENTAL MODEL 1-G CONVERTIPLANE IN FLIGHT was photographed recently when it was flown 25 miles from Bellanca Field, New Castle, Delaware, to the new home of the Transcendental Aircraft Corp., at Glen Riddle, Pennsylvania. Powered by a 160-hp. Lycoming engine, it has two 17-ft. rotors mounted on each tip of its 21-ft. wing. These rotor heads are rotated 84 degrees forward for forward flight. It has made over 100 flights, logging 60 hrs. in the air, of which 20 hours were in forward flight with the rotors tilted 35 degrees forward. It has attained 115-mph. as a helicopter. Forward speeds up to 150 mph. are expected with full-tilt of the rotor heads. The company is now working under its third U. S. Air Force contract.
—(Transcendental Aircraft Photo.)

Hawaii-Dallas Non-Stop

The sun was about to drop behind Diamond Head when Navy Lt. Cmdr. Robert White and an 11-man crew boarded a Super Constellation at Hickam Air Force Base, Hawaii.

White and his crew stowed their gear and bologna sandwiches in time to make a 5 p. m. take-off. Twelve hours and 40 minutes later they touched down at Hensley Field (9:40 a. m. Dallas time) to complete the longest flight ever to terminate at Dallas.

Their route measured exactly 4,000 statute miles. It also was probably the longest straight-line distance ever traveled non-stop by a Super Connie in Navy service, according to Cmdr. White. He had tail winds all the way. Cmdr. White said his Super Connie had only standard provisions for fuel. A small reserve remained in the tanks after landing, he said, "but it wasn't much."

Temco has been performing major overhauls on Navy Constellations since Jan., 1954, under a contract acquired late in 1953. Normally, VR-7 aircraft, en route from Hickam AFB to Temco, refuel at a West Coast base before proceeding to Dallas.

Commander Bob White

cargo:
one engineer
and slide rule

AERO COMMANDER

Mr. M. is on his way to solve a difficult production problem at a plant 700 miles from his home office. His company plane will get him there fast, comfortably and free of restricting schedules.

He'll set down at one of over 600 Esso Dealer Airports, where he can let the Esso Aviation Dealer take over. By showing his Esso Aviation Credit Card and identifying himself, Mr. M. can charge high quality Esso Aviation fuels and lubricants, tire and battery service, landing fees, overnight storage, and minor emergency repairs.

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YOU'RE ON TOP WITH THE TRI-PACER 150

When your personal transportation, whether for business or pleasure, is the sleek, new Piper Tri-Pacer 150 you're "On Top" in more ways than one...

..."On Top" of your business competition because you get there sooner, more often, less expensively.

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..."On Top" because you fly the Tri-Pacer with ease and peace of mind thanks to simplified controls, tricycle landing gear and traditional Piper dependability.

..."On Top" of the world because flying such a smooth, quiet, comfortable airplane with nimble performance gives you a wonderful feeling of accomplishment and pleasure in being able to pick up and go when you wish.

Fly the new Tri-Pacer 150 at your Piper dealer's or write for new full-color brochure, Dept. F-4.

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WRITE FOR FURTHER INFORMATION TODAY

prankish

MOODBEAMS #5

While papa blissfully dreams about Southwest Airmotive ads, mama sneaks in with an April First Hotfoot. For technical-minded readers, prankish mama is Pat Ferguson, 20, 5'6", 125 lbs., black-haired, brown-eyed.

Papa, being a pilot, is used to this kind of carryin'-on, regularly suffering through a torture known as The Olde Promised Delivery Date Hotfoote, applied each time his flying machine gets into the shop for a check or overhaul. Getting the darned thing back out again is even tougher than getting a foot out of a frying Texas boot.

We have this to say to papa: The Southwest Airmotive Aircraft Division now has a plan whereby you WILL get your plane on the Promised Delivery Date. Write our Service Rep for details.

— And we have this to say to mama: Cut that out, now — those boots cost 60 dollars!

Southwest Airmotive COMPANY LOVE FIELD DALLAS

Just among ourselves

EDITORIALS

A SIGNIFICANT OVERHAUL CONTRACT

THE United States Air Force last month announced the award of a jet power plant overhaul contract to one of the nation's oldest and largest fixed-base operators — Southwest Airmotive Company. The award establishes a significant precedent and is worthy of special attention because it is the first USAF contract to a commercial concern excepting original jet engine manufacturers.

Calling for the overhaul of more than 1,200 Allison J-33-A35's and accessories, the contract may be only the first of more to be awarded to other capable engine overhaul companies. We hope so, not only because commercial shops can do the job efficiently and economically, but also because jet engine know-how should be diffused into commercial operations throughout the nation to beef-up reserve air power in case we soon find ourselves in another defense emergency.

Commercial operators have proved beyond the shadow of any doubt that they can train students, haul soldiers and freight and overhaul certain types of military equipment far more economically and efficiently than the military services. This does not imply a criticism of military efficiency; rather it's an honest recognition of the proven fact that the military is geared to fighting and winning wars — and not necessarily to performing certain services as well or as economically as commercial enterprise.

It certainly is a feather in Southwest Airmotive's cap to achieve the distinction of receiving the first such overhaul contract. So to the USAF and to Southwest Airmotive, hearty congratulations for an historic milestone and a long step forward in practical air preparedness!

THE TACAN FIGHT

AS predicted in these columns last month the spirited dispute over the Air Navigation Development Board vote recommending experimental TACAN as a common system to replace the VOR-DME system now in operation managed to reach important congressional committees.

Testimony by representatives of the Department of Defense in open hearing before the House Government Operations Subcommittee on Military Operations disclosed that the military started working on TACAN in 1947 and that specific contract values have accounted for an expenditure of 181 million dollars of public funds.

In a closed session with Senator Warren G. Magnuson, CAA Administrator Fred Lee presented all the facts known by his agency while Dr. Donald A. Quarles, Assistant Secretary of Defense, provided a prepared statement. Since this hearing was closed, we can only guess as to the substance of the reports. The same holds true in hearings still going on in the House Interstate and Foreign Commerce Subcommittee, vitally concerned with aviation policy.

Congressional interest in the dispute is a healthy indication that the matter will be thoroughly aired and that justice ultimately will be rendered. The issue has been under the cloud of military classification and no interested party could find out anything about TACAN except that it was a tactical military system under development.

No doubt a good measure of congressional interest stems from the people who are making their opinions known to their senators and congressmen.

PILOTS ASSOCIATION

AS most U. S. airmen already know, there has never been a strong national association of pilots operated on a non-profit basis under the democratic process of a voting membership and published financial statements.

Last month a group of well-known pilots took the bull by the horns and formed the National Pilots Association as a non-profit group to be run *by* pilots *for* pilots. Incorporated under the laws of the State of New York (which prohibit directors to profit from the organization), NPA has set up temporary headquarters in Room 1403, 52 Vanderbilt Avenue, New York 19, New York. The temporary board of directors consists of five pilots with good geographical spread from California to Washington. The first president is Dwight Joyce of Cleveland, Ohio, nationally known pilot and business executive who heads up the Glidden Company.

Later on in the fall, NPA plans to hold its first annual meeting at which time it will affiliate with the National Aeronautic Association, American affiliate of the Federation Aeronautique Internationale, and elect a board of directors consisting of nine members. At the present time the temporary board is enlisting charter members to the Association. Complete information is available without obligation from the NPA secretary, address above.

We believe there has long been a need for such an organization, with membership limited to pilots and with the membership controlling the Association. If NPA keeps going on the course originally charted for it, there's no doubt but that it can render powerful and productive services not only for its members but for aviation's general welfare.

SOMEONE'S ON HOP

WE don't know who thought up this one but the Civil Aeronautics Board is calling for industry comments on a proposal to replace existing aircraft identification markings with large markings on the

(Continued on page 49)

Collins

CUSTOM INSTALLATION

FOR THE NEW

BEECHCRAFT SUPER 18

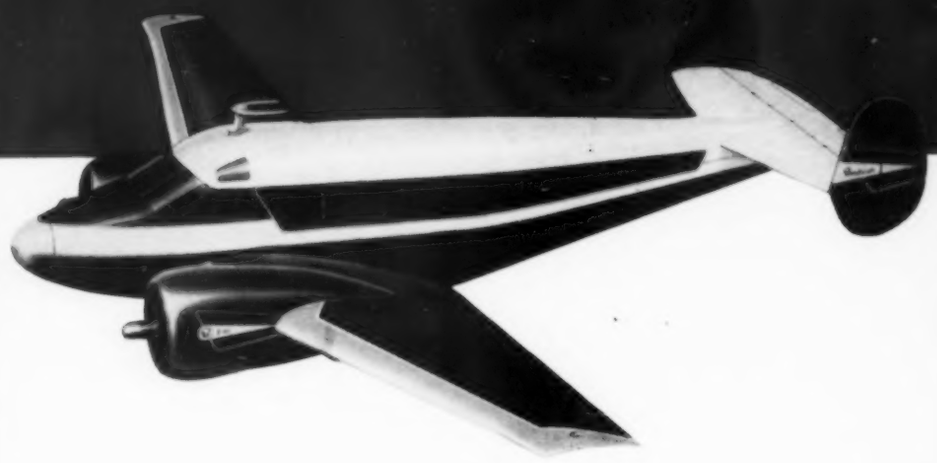
37-J: VHF
Navigation Antenna

37-R VHF Antenna
Communications

17L VHF
Transmitter

51R-3 VHF Receiver
Two Units Included

51V-2 Glide Slope
Receiver



Collins equipment satisfied so many Beechcraft owners, the Beech Aircraft Co. now offers factory installations on the new Super 18. Included in the custom package are units for complete VHF communication, dual VOR, VAR navigation and *precision* ILS instrument approaches. In addition to the units shown, Collins 37-P Glide Slope Antenna is used.

Convenient remote control from a new radio panel is an outstanding feature of this Super 18 System. The installation is designed so that additional equipment, such as the COLLINS INTEGRATED FLIGHT SYSTEM, can be included or added later.

Collins Radio in Beechcraft

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Strategically astride the northern approaches to our continent, combat-proven C-119's are an integral part of the offense-defense air-pattern of the North American allies.

Operating as effectively in the grueling cold country as they do in the steaming tropics, the C-119's once again are proving their claim to the title of "world's most versatile military transports."

These cold weather *Boxcars* are helping to keep freedom's warm light aglow.

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Speed Control Division, St. Augustine, Fla.
Stratos Division, Bay Shore, N. Y.

Enlist to Fly in The U. S. Air Force

Large wing area of 330 sq. ft., big flaps and leading-edge slats, make the Explorer a "natural" for slow flight and maneuverability in searching for uranium with airborne scintillation equipment. Flap area is 34 sq. ft., and aileron area is 37.6 sq. ft.

The Associated Explorer

Uranium hunting with power, payload and slow speed

Power is the Explorer's advantage in the uranium country, for it has a 450-hp. Pratt & Whitney engine. Picture shows a steep climb from take-off. Cruise power setting is only 1,800 rpm. and 15 ins. of manifold pressure.

By GEORGE E. HADDAWAY

FLIGHT MAGAZINE Photos by Jep White.

AERIAL search has become the most effective method of uranium exploration although no one as yet seems to have found the perfect airplane for the job.

Nearly every type of craft has been tried, from Cessnas and Pipers to PBY's and helicopters. All have their drawbacks and good points but limitations seem to narrow the advantages of everything tried so far, especially in the high, hot and rugged terrain of the West where uranium hunting is most promising. Either the equipment is too fast or too small, too large or too costly, too weak on performance or too short on load carrying at the higher altitudes. So it is that the search for the perfect plane — one that provides optimum performance and load carrying ability without costing too much money — goes on apace.

One of the most interesting designs to come our way is a completely re-engineered conversion of the L-13 now being turned out for the trade by Associated Airmotive of San Antonio, originators of the Camair 480 twin Navion design. Associated calls it the "Explorer" and picked the L-13 only after months of thorough research and study as to the kind of flying machine offering the most advantages, not the least of which was

With 450-hp. engine, the Explorer's 4,440-lb. gross weight allows 2,000 lbs. for useful load. Span is 40 ft. 5 ins. and length 31 ft. 7 ins.

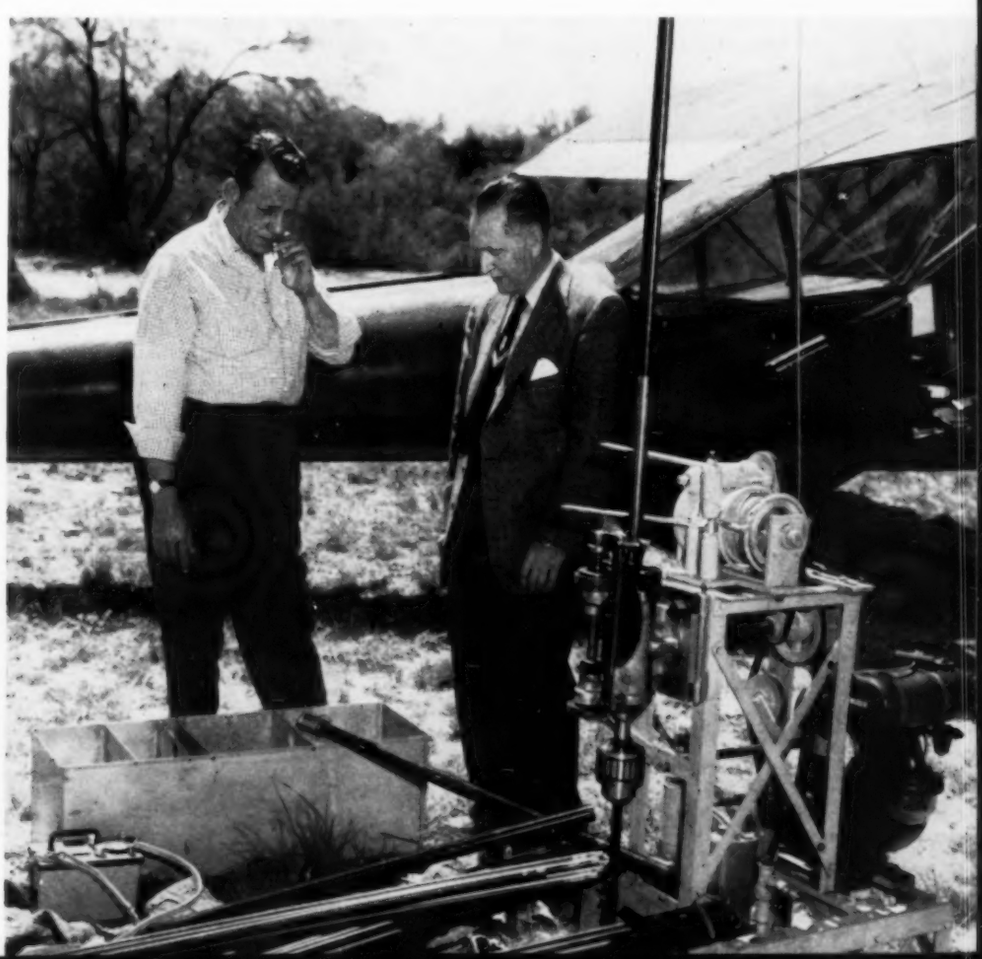
plenty of power, coupled with slow flight characteristics and load carrying ability at an original cost within the realm of reason. Associated is convinced they have developed the most efficient and practical aerial platform possible without starting a design from scratch, which, they maintain, would cost upwards of a million dollars to put into production. "Our only drawback," says versatile Associated President Darrell White, "is that they didn't build many L-13's. Even so, starting a uranium hunter from scratch would be too costly."

The Associated Explorer bears little resemblance to the unconverted original. A supercharged R-985 450-hp. Wasp Jr. engine turning a Hamilton Standard prop replaces the 245-hp. Franklin in the nose. The empennage has been completely re-designed with a third more stabilizer area. Flap area has been reduced by one-third and the entire structure beefed-up, new jigs having been constructed for both new nose and tail sections. A much larger landing gear provides five times the braking area of the military version. Dual main gear wheels can be installed for operation in soft ground or sand, and the main gear wheels can be pivoted to the inside which allows the airplane to be towed on the ground when the wings and tail are folded.

With an empty weight of 2,440 pounds and a recommended gross weight of 4,440 pounds, the Associated prospector ordinarily can carry a useful load of 2,000 pounds. Originally the L-13 carried only 40 gallons of gas. An extra wing tank of 60 gallons capacity has been added to provide a total capacity of 100 gallons, which gives five to six hours range according to the power setting. Most exploratory flights probably will use only 100 of the 450 horses. Sharp engineering by Associated managed to keep additional weight to only 235 pounds over the original design, 175 being in the heavier engine and the rest in beefed-up structure. This is a most reasonable price to pay for the heavy increment in horsepower, range and the ruggedness because there is no substitute for horsepower on the high plateau when usable reserve power is instantly needed for maneuverability in clearing terrain obstructions or in counteracting atmospheric disturbances influencing the stability of the aircraft.

Darrell White and his brothers, George and Jep, did not limit their search for an ideal exploration airplane

With complete equipment aboard, Explorer's crew can locate anomaly from air with scintillation devices (by geologist's knee below) and land immediately to take cores with portable diamond drill rig. Looking at rig are Darrell White (left) of Associated Airmotive and O. Scott Petty, who is chairman of the Petty Geophysical Company.



Supercharged engine enables Explorer to operate effectively at high elevation in mountains.

to the flying platform itself. That was only half the battle. The other half was to find the best exploration equipment and instruments money can buy. Today's airborne survey equipment is more complex and heavier and also more different types of equipment are operated simultaneously in order to provide a more complete survey picture than previously sought by aerial hunters. Such scintillation counter refinements as upper and lower pulse discriminators, larger crystal volume and automatic chart recorders, together with the necessity of having automatic radio altimeter chart recording equipment, magnetometer recording equipment, navigational fix equipment, airborne core-drill equipment, and field assay equipment are but a few of the factors demanding load carrying ability plus space in which to carry the load while at the same time leaving plenty of room for a pilot, perhaps a reserve pilot to minimize pilot fatigue occurring in this type of flying, and the instrument man working over his charts at a desk in the back of the cabin. Associated's Explorer boasts a floor area of 50 square feet plus a space volume of 22.5 cubic feet for scientific equipment racks without utilizing any of the floor area or cabin area needed for crew and cargo.

Searching about the country, the White brothers located the ideal scintillation counter and related equipment in Boulder, Colorado, at the Mt. Sopris Instrument Corporation laboratories. The simplest and most efficient portable drilling rig narrowed down to an ingenious core drilling apparatus, made by one Greasy Smith of Houston, Texas, which drills a hole 200 feet deep and capable of taking a geiger probe and adequate core samples to determine whether or not a commercial uranium ore body, commonly called an anomaly, actually exists in the spot where the airborne scintillation counter indicates strong radiation.

The rig comes apart in six small portable pieces, none weighing more than 60 pounds each, including the small, 5-horsepower gasoline engine. Drill pipe is one inch chromemoly tubing. Capable of drilling 20 feet an hour through solid rock with diamond drill bits, the entire rig can be assembled and operative in less than an hour. You don't have to be an expert oilfield roughneck or toolpusher to make it work as it's the epitome of ruggedness and simplicity. Provision is made in the Explorer cabin to haul enough water for a complete core drilling job, since the small pump re-circulates the water in the drilling process without undue loss.

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Tube shown on drill rig above is a sensitive probe which is lowered into drill hole to log subsurface radiation of ore body.

Large Explorer cabin has 50 sq. ft. of floor area, measuring about 5 ft. 1 in. wide and 10 ft. long. Geophysicist Petty is shown with an assay kit and burner carried on exploration for ore analysis on the spot. Cabin doors fold away to open entire cabin length for easy access.

Ready for aerial prospecting and core drilling to define ore bodies, this Bell Model 47G carries a scintillometer with recorder (left) and diamond core drill (center; note scintillometer installation in nose). Drill is shown at right ready to core.
—(Bell Photos.)

Bell's Uranium Project

TEN years ago, the value of the commercial helicopter in petroleum geophysical survey work was unknown. So Bell Aircraft Corporation, after obtaining the world's first commercial helicopter airworthiness certificate in 1946, organized a subsidiary and assumed the expense of proving the helicopter's usefulness in the oil fields.

Today there are more Bell Model 47 helicopters in commercial service than all other makes combined and there are over a dozen commercial helicopter charter companies leasing Bell machines to oil companies throughout the world. Bell has dissolved its petroleum helicopter operating subsidiary and has settled down to the business of manufacturing helicopters for the commercial demand it developed.

Now a new surveying opportunity has developed for helicopters and Bell is going to repeat its pioneering and proving of a new market for helicopters. It has established a subsidiary to search for uranium ore in the Colorado Plateau and elsewhere. The new project, conducted by the "Bell Exploration and Development Corporation," will operate just as the petroleum subsidiary did — after it has proved the helicopter's usefulness in uranium prospecting, it will be dissolved.

With offices at Fort Worth, Texas, and Glendale, California, the subsidiary's president is Harvey Gaylord, Bell's vice president in charge of the helicopter division. General manager is Art Fornoff, Bell's West Coast sales expert.

They have equipped a Model 47G Bell helicopter as a flying demonstrator and it is touring the uranium country with special equipment installed. This includes not only the usual aerial detecting devices but a

(Continued on page 42)

Helicopter carries drum in sling for easy on and off loading at otherwise inaccessible spots without landing. Water or fuel may be hauled in this manner.
—(Bell Photo.)

Fouga CM-170-R Magister is a small French trainer powered by two Turbomeca Marbore 2 jets rated at 880 lbs. each. Standard fuel capacity is 192 gals. with two 34-gal. wing tip-tanks as auxiliary capacity.
—(Fouga Photo.)

Small Jet For Speed and Altitude

FROM Detroit to Washington is about 425 miles. Mr. B's pilot had flown it so often he could give a quick answer when the phone rang and it was Mr. B himself, in a hurry — it was getting along toward noon in Detroit and the boss wanted to know if he could keep a luncheon appointment in the nation's capital. "I'll have you there within 85 minutes from take-off and I've already checked the weather," the pilot answered.

As the pilot loaded his boss aboard, he went over the details of the trip in his mind, making certain the flight plan he had just filed would work out. Letting down 71 minutes later, he found he was right on the dot.

His Detroit-Washington trip went like this:

	Duration (Mins.)	Distance (Miles)	Fuel Used (Gals.)
Taxiing	5	..	5
Take-off and climb to 20,000 ft.	9.5	60	36
Level flight at 20,000 ft.	56.5	357	122
Descent to 2,500 ft. (with air brakes)	1.5	8	3
Holding at 2,500 ft.	5	..	9
Taxiing	5	..	5
Totals	82.5	425	180

He had beat his ETA by a couple of minutes — this was really operating! He could have added another thought — this was quite an airplane for executive flying.

What business pilot wouldn't boast about such an airplane? The one Mr. B went to Washington in is not so much of a dream ship as the reader might imagine. It is, in fact, already flying. As the fuel figures indicate, it is also a relatively light airplane — grossing around 7,000 lbs. Also as the figures indicate, it is a jet — a twin-engine jet with pressurization and air-conditioning.

But it is a military airplane at the moment. Although it is a foreign make, it has a counterpart in the U. S. — Mr. B's French-manufactured Fouga CM-170-R can give us interesting details of what to expect from the new Cessna T-37 twin-jet trainer being produced now for the Air Force and ordered by the Army for use as a staff airplane. Both the Fouga and the Cessna are powered by the same basic engines — the Fouga by Turbomeca Series 2 Marbores of about 880 lbs. of thrust each and the Cessna by Continental J-69's of about 920 lbs. of thrust each.

Full details of the new Cessna T-37 await final evaluation and release by the Air Force. Latest details of the Fouga 170 have been provided this magazine by the manufacturer, Fouga & Cie., 90 Rue de Miromesnil, Paris 8, France. While the Cessna trainer is a newer design and is expected to differ in many respects, the Fouga story makes interesting reading even if it does not compare the two airplanes.

Production Schedule

The Magister was ordered as a prototype in 1951, made its first flight 12 months and 28 days later and the first pre-production prototype, incorporating improvements from a 2-year experimental project, flew on July 7, 1954 after quantity production had been ordered in January, 1954. Seven Magisters were built in 1954, 25 are to be produced in 1955 and 93 in 1956. It is currently being groomed as a NATO trainer for North Atlantic Treaty nations with high Fouga hopes for expanded sales and production.

Relatively large wing area of 186 sq. ft. and aspect ratio of 7.4 give Magister conventional handling characteristics despite its top speed of over 400 mph. Tandem cabin is pressurized. Note wide track of landing gear. Span is 37 ft., length 33 ft., height 9 ft. and maximum gross weight 7,055 lbs.
—(Fouga Photo.)

Tandem seating is emphasized in Magister design for student instruction, although current U. S. preference is side by side, as reflected by new Cessna T-37 jet. Cessna is of later design than Magister, which dates from 1951.
—(Fouga Photo.)

The Magister was developed as a trainer for the military market with high performance on the order of a level flight maximum speed in excess of 420 mph., a maximum Mach number exceeding 0.80 and to operate at altitudes above 30,000 ft. with pressurization and air-conditioning for its two-place tandem-seating cockpit. The design features high aspect ratio for altitude performance, moderate wing loading for relatively low take-off and landing speeds, and twin-jet installation for engine-out dependability plus the advantage of increasing flight duration by operating with one engine shut down for cruise.

It is an all-metal mid-wing with a V tail and tricycle landing gear. The wing uses NACA series 64 airfoil section with thickness/chord ratio varying from 19% at the root to 12% at the tip and has a slight leading edge sweepback of 13 degrees.

Engines and Fuel

Fuel for the two Marbore 2 engines is housed in the fuselage, with standard capacity of 192 U. S. gals. Two 34-gal. wing-tip tanks can be added, boosting total capacity to 260 U. S. gals.

The relatively high fuel consumption of jet engines, with which lightplane operators will have to become reconciled, demands large tank capacity. The Fouga factory's operating data for the Magister:

	Rating			
	Max. take-off	Max. climb	Max. continuous	Idling (gr'nd run)
Turbine Speed rpm.	22,600	21,750	21,000	6,000
Nozzle Temp. Cent.	650-670	600	580	480
Static Thrust lbs.	880	795	705	37
Spec. Fuel Consumption lb./lb./hr.	1.15	1.1	1.07	4.5
Duration mins.	15	30	unlimited	15

Interesting facts about the Turbomeca Marbore 2 jet engines as listed by Fouga for its Magister installation include the following:

Dimensions: Max. diameter, 22⅜ ins.; length (without tail pipe) 43 ins.; weight, 300 lbs.

Accessory Drives: Tachometer, electric starter and accessory gear box.

Turbine: Single-stage, axial type. Compressor: Single-stage, single-flow, centrifugal type; theoretical air mass flow during ground run, 16 lbs. per sec. at 22,600 rpm.; theoretical compression ratio at sea level, 3.95 at 22,600 rpm. Combustion Chamber: Annual type with centrifugal fuel injection. Exhaust System: Fixed type; nozzle area, about 54 sq. ins.; speed of ejected gas, 1,675 ft. per min.; maximum gas temperature, 650 degrees C.

Weights and Equipment

Fouga's information on weights furnishes some interesting studies, in which varying missions and equipment are listed so that empty weight (basic operational) varies from 4,589 lbs. to 4,754 lbs. while gross weight ranges from 6,097 to 6,976 lbs. Standard fuel capacity is 1,323 lbs. plus 441 lbs. for tip-tank fuel. Since the Magister is a military trainer, weights are included for military equipment such as armament controls, machine guns, bomb racks, rocket launchers, gunsights, blind flying hood, and ammunition. Those interested in seeing how the airplane would make up as a civilian craft can juggle these weights around to arrive at interesting conclusions. The factory's weights are as follows:

Airframe: 2,716 lbs. (wing 1,089, fuselage 743, flying controls 260, tail plane 165, landing gear 459).

Power Plants, Accessories, Tanks, Miscellaneous Equipment: 1,552 lbs. (engines 690, engine equipment 196,

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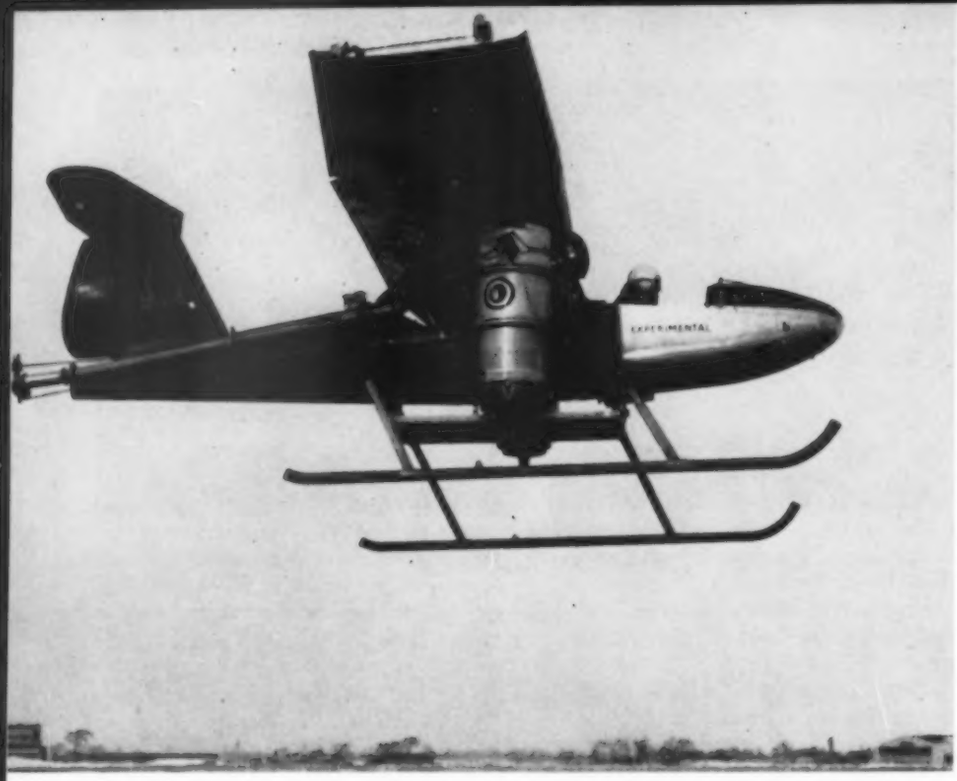
There are 8 Fouga Magisters currently flying and they have logged over 500 hrs. of operation. Total production order calls for 100 of the French trainers. This photo shows slight sweepback of the wing leading edge.
—(Fouga Photo.)



Bell Aircraft fashioned its "poor-boy" VTOL from a glider fuselage, a Cessna lightplane wing and two Fairchild J-44 jet engines borrowed from the Air Force. The engines produce a combined thrust of 2,000 lbs. and the craft grosses just under 2,000 lbs. in weight. Wheels are not needed, so skid gear is used.
—(Bell Photo.)

Light Vertical Riser

BELL Aircraft Corporation has been experimenting for months with a "poor-boy" VTOL (for vertical take-off and landing) aircraft. There are other vertical risers — the Navy's tail-sitting Convair and Lockheed fighters and the wingless Rolls Royce "flying bedstead" in England, for example — but the Bell is unique in that it is a lightplane, it operates in a normal horizontal attitude at all times and it retains the conventional airplane's fixed wing.

The Bell VTOL looks like a cross between a glider and a Cessna lightplane. In fact it is, for it uses a glider fuselage and a Cessna wing. But instead of conventional landing gear, it needs no wheels and uses a helicopter's skid gear. Instead of a propeller, it uses two small turbo jet engines. Bell used its own funds to build the VTOL as cheaply and as quickly as possible, but it obtained government assistance in obtaining the small jet engines on a loan from the Air Force. They are Fairchild J-44's which normally are rated at about 1,000 lbs. of thrust each as power plants for target drones such as the Ryan Firebee.

The experimental aircraft is a single seater weighing about 2,000 lbs. Span is 26 ft. and length 21 ft.

For take-off and low-speed flights, compressed air is ejected from nozzles at the wing tips and in the tail to provide pitch, yaw and roll control. Conventional airplane control surfaces are used as elevators, rudder and ailerons for cruising speed. The main jet exhaust nozzles are then used, by deflecting the exhaust rearward, for high-speed thrust. The Fairchild engines can be rotated in flight from a vertical position for take-off or landing to a horizontal position for forward flight.

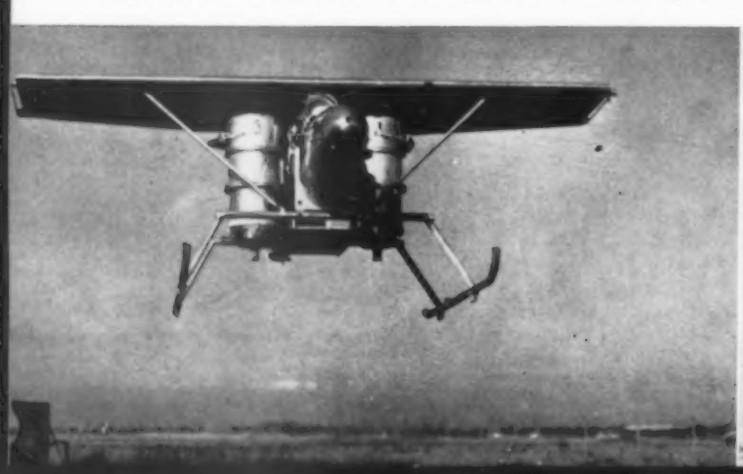
Bell Test Pilot David W. Howe is said to have gained mastery of the control techniques within minutes after take-off on the craft's first flight. The first free flight was made on November 16, 1954. More than a score of flights have been made since then at the Bell plant in Buffalo, New York.

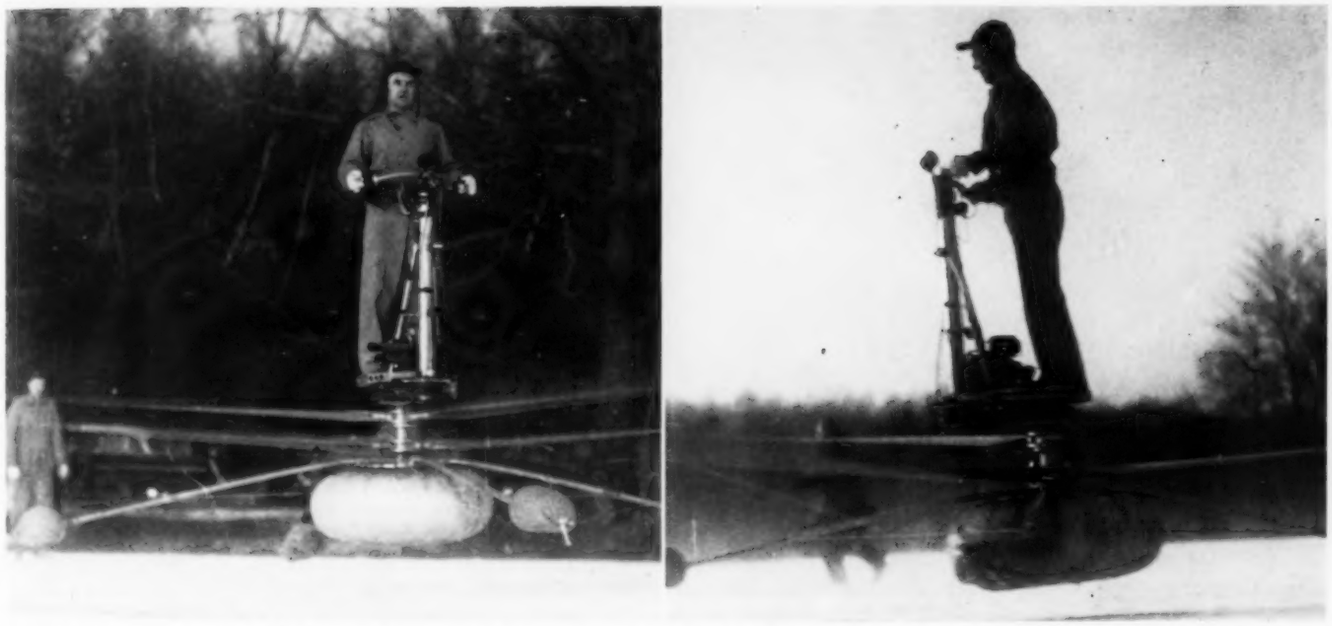
Bell says the design has commercial possibilities.

The small experimental VTOL is only a start, said Larry Bell, head of the company, indicating he has plans for trials with a larger craft in the future.

Such an airplane would completely eliminate the need for extensive paved runways and clear approaches for airport sites. Reliance on exhaust thrust eliminates the need for propellers or rotor blades as on helicopters or convertiplanes, together with all the complications involved in those craft. The possibilities in a VTOL development have not been detailed by Bell, but the firm is a leading producer and developer of fixed-wing airplanes, helicopters and convertiplanes. ★ ★ ★

Flight views show Bell VTOL hovering. Engines are tilted from vertical to horizontal for forward flight. Compressed air nozzles at wing tips and in tail are used for control until forward speed allows pilot to use conventional rudder, elevator and aileron controls.
—(Bell Photos.)





Two close-ups of the helivector in flight show pilot hovering at left and in forward flight at right. Pilot leans in direction he wants to go and this change in center of gravity alters the relation of lift and thrust vectors.
—(Helivector Photos.)

Helivector for Simplicity

A NEW principle in control of flight, developed by the National Advisory Committee for Aeronautics, has been reduced to actual practice in a one-man "helivector" now being flight-tested by the Helivector Corporation at Mt. Vernon, New York. It provides for the pilot to control his direction of flight by changing the miniature copter's center of gravity, the pilot doing this simply by leaning one way or another.

The helivector made its first flight indoors on November 24, 1954. Since then, it has logged about 15 hrs. or more of flying time. Several non-pilots have flown it, one of them a woman who had no previous flight instruction.

Don de Lackner, president of Aero-affiliates, Inc., Hicks Field, Ft. Worth, Texas, engaged in aircraft subcontract projects, said the machine was developed at his base by L. C. McCarty, formerly president of Marine Aircraft, Eagle Mountain Lake, near Ft. Worth, and is being perfected by the Helivector Corp., a firm organized for the project as a subsidiary of de Lackner Helicopters, Inc., which began its helicopter design work during World War II with a helicopter since shelved. Military interest has been sought with the new machine, but de Lackner said no contract has yet been obtained.

The helivector is powered by a 2-

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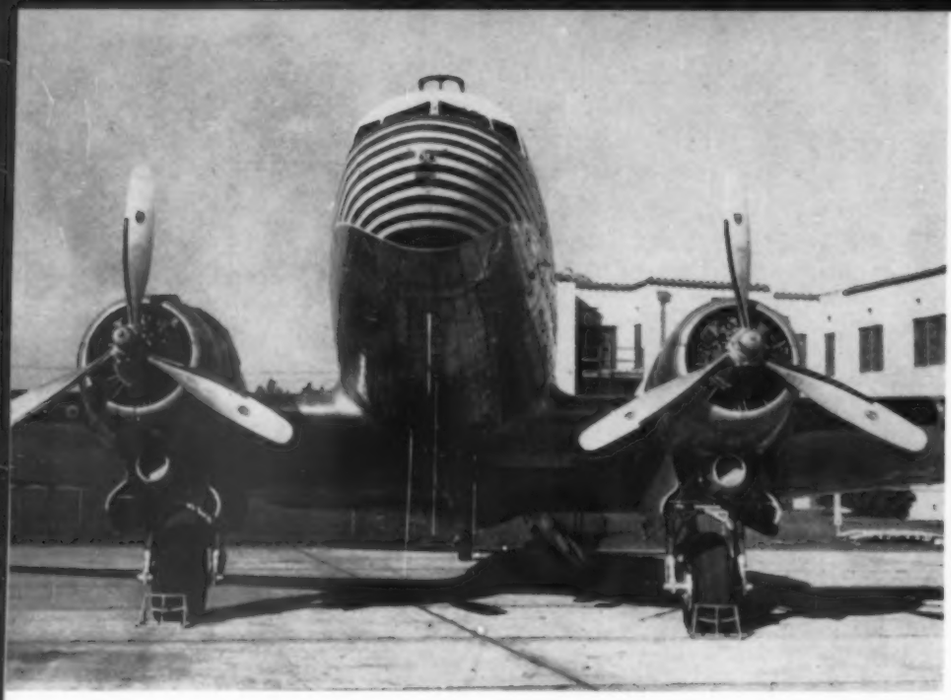
One-man helivector is powered by 20-hp. outboard boat motor. It has 125-lb. empty weight, grosses 385 lbs. Fifteen-foot rotors are counter-rotating.
—(Helivector Photo.)



Wheel well doors for Douglas DC-3 and C-47 completely enclose the main wheels when retracted. Cruising speed is boosted 10 mph. Note new oil cooler scoop.
—(PAA Photos.)

Clipper Base Designs for Execs

Significant performance gains are offered by DC-3 and DH Dove modifications at Brownsville

BUSINESS aircraft installations and modifications which have given significant performance improvement to the DC-3 and other popular corporation planes are identifying Pan American World Airways closely with business flying activities. These improvements are the work of PAA's Brownsville Customer Base on the Texas-Mexico border at Brownsville International Airport.

Newest PAA development is landing gear doors for the DC-3. These are said to give the Douglas a 10-mph. increase in cruising speed at an increase of only 80 lbs. in weight. Several private DC-3's are now being equipped with the doors, which completely enclose the wheels in flight.

R. M. Adams, maintenance superintendent at the base, reports to FLIGHT MAGAZINE that his crew have also perfected new landing gear doors for the de Havilland Dove, widely used by American business executives. These add 8 mph. to the Dove's cruising speed when combined with flush riveting of the wing leading edge.

Other new PAA developments for business pilots include:

A new and different long-range outer-wing fuel tank installation for DC-3's.

A short-stack nacelle modification for DC-3's.

A long picture window for Convair pressurized cabins.

The most interesting of the projects is the wheel door system for the DC-3. At a cruise setting of 700 hp., the doors give the Douglas workhorse a net gain of 10 mph., Adams says. The minimum speed gain is 8.5 mph. at 600 hp. and the gain increases at horsepower settings below 600 and above 650. The result can also be described in another way. To obtain the same speed without the doors as with the doors at 750 hp., a cruise setting of 900 hp. is required, so that the reduction in drag is roughly equivalent to a saving of 300 hp.

Another view of the wheel doors, this time on a PAA Hi-Per DC-3 with R-2000 engines.
—(PAA Photo.)

Gear retraction with the new doors is only 8 seconds as compared to 21 seconds originally for the DC-3. This offers the pilot a fast cleanup for a single-engine go around in an emergency. The original rubber bungee was removed and replaced with a hydraulic bungee which increased the retracting force and the hydraulic system was reworked for the faster retraction cycle.

PAA kept the installation as simple and foolproof as possible and did not add any electric or hydraulic gadgets or change the nacelle structure in any way. The four doors on an installation can be removed by two men in 20 mins.

One essential in the system is a completely new oil cooler scoop, which was designed to fair in the doors and exhaust the air out the sides — none of the oil cooler exhaust enters the wheel well. This new scoop moves the oil cooler forward and is of a universal type which can be fitted to oil coolers of three different diameters. The installation can be made on any model R-1830 or R-2000 for DC-3's and C-47's, but an 1820 engine requires a special scoop and the R-2000 scoop is made of stainless steel to meet T category requirements for that engine only.

The doors are interchangeable from

Wheel well doors designed by Pan American for the de Havilland Dove add 8 mph. to speed and improve low-speed lateral stability when combined with leading-edge flush riveting.

—(PAA Photos.)

No. 1 to No. 2 nacelle and spare parts for the door system are stocked by PAA for customers.

The PAA wheel doors for the de Havilland were designed and installed on a Dove owned by William F. Carr of Corpus Christi and have been flying for the last six months without excessive maintenance. Adams says this installation netted a gain of 8 mph. for the Dove when combined with the flush riveting of the wing leading edge. These two items also increased the airplane's lateral stability at low speeds and in stall conditions, he said. The total cost in weight was only 28 lbs.

PAA is recommending that DC-3 operators accomplish a new nacelle rework concurrent with installation of landing gear doors on the Douglas. This rework saves 126 lbs. of weight which can be used to more than offset the gain in weight of the door system. The nacelle modification installs a short stack on the collector-ring wye, thus eliminating the need for the nacelle's recessed tunnel. The tunnel and steel frames are then removed and replaced by aluminum frames and stainless steel pre-formed skin. This installation also reduces cabin noise and vibration.

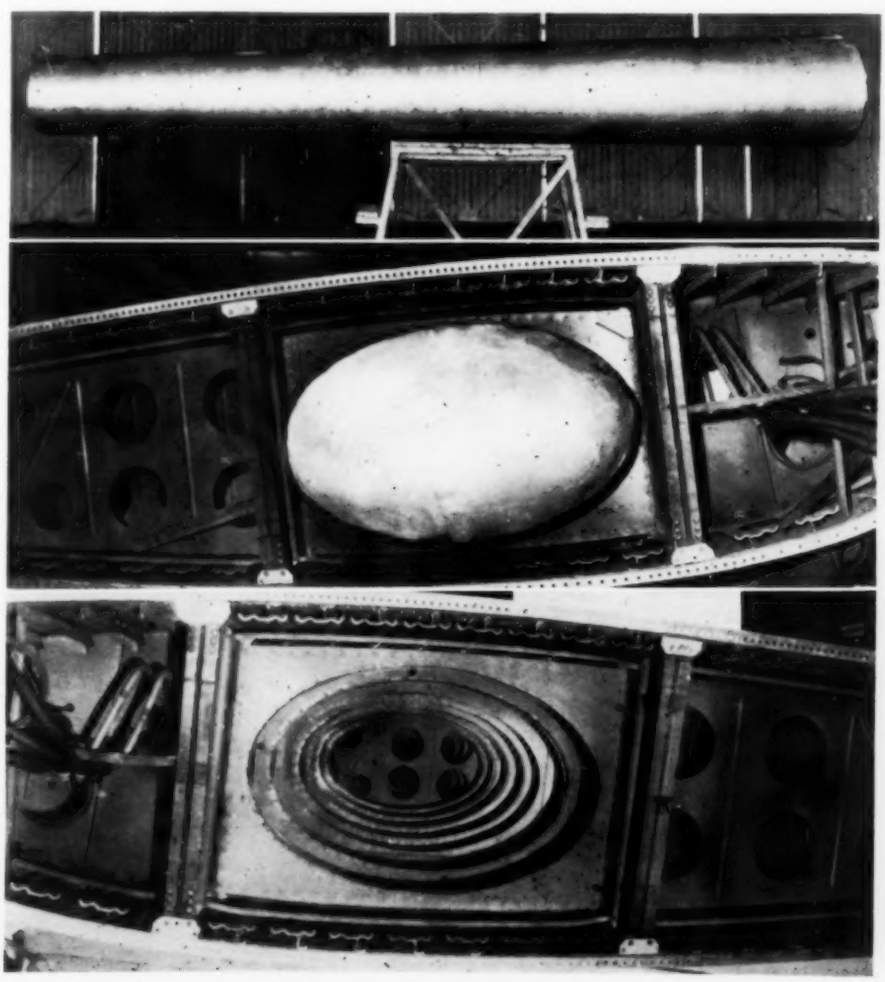
There are other long-range fuel tanks for DC-3 outer panels on the market but PAA believes it has engineered some advantages into its particular installation. This utilizes a single, long cylindrical tank in each wing with a total of 400 gals. of usable fuel. A simple rework of the wing structure holds down the weight involved and the use of a single cylinder makes for fewer fuel line connections. Simplicity makes removal easier and cuts maintenance costs.

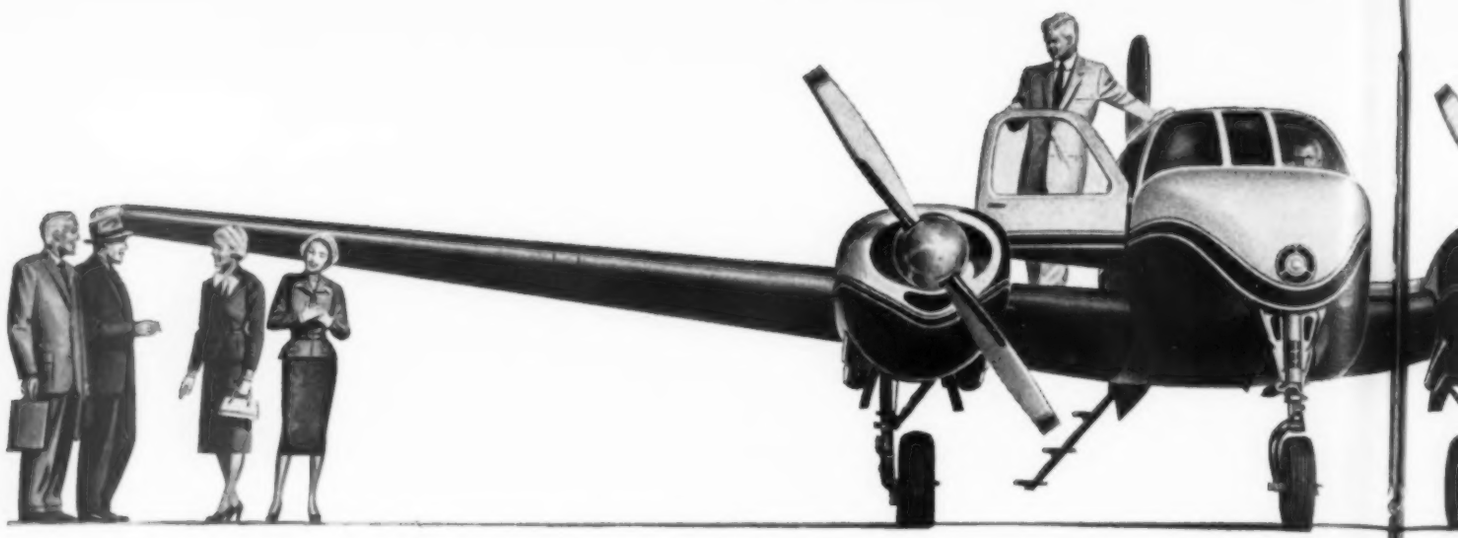
Adams believes his shop has turned out the world's first picture window for a pressurized cabin. During the course of a Convair 240 interior job recently, the shop designed, certificated and installed two picture windows measuring 45 ins. by 17 ins. They are of the off-set flexseal type with a green Solex, full-tempered outer pane designed by PAA and a leading aircraft glass manufacturer. The new windows have excellent optics and serve to reduce cabin noise. They can be installed anywhere in a CV 240 or 340 cabin.

★ ★ ★

Tubular long-range fuel tank designed by PAA for DC-3 features simplicity of installation in outer wing panels (right). Shown below is a PAA DC-3 short-stack nacelle modification which saves 126 lbs. in weight.

—(PAA Photos.)





Big, Distinctive,

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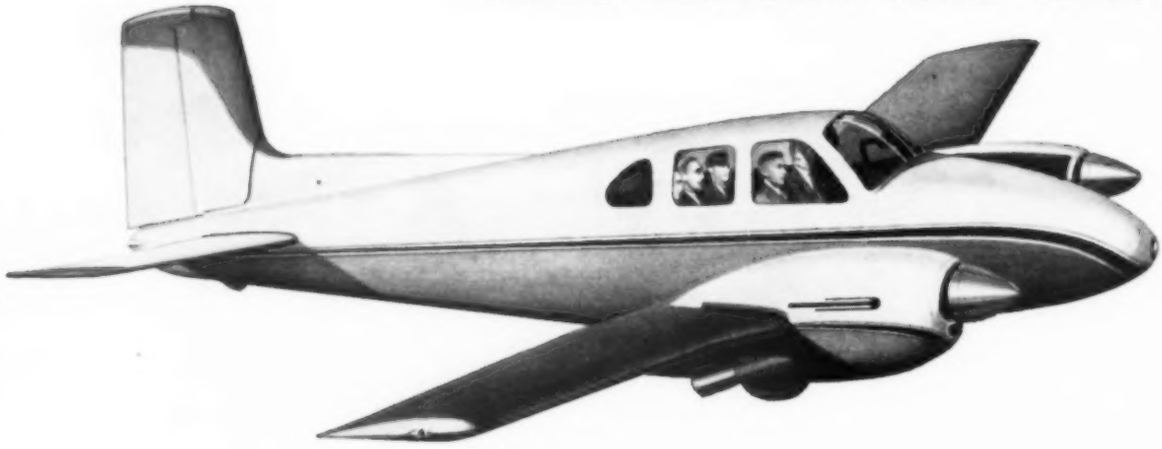

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Oakland—Pacific Aircraft Sales Company
Oklahoma City—Aircraftsmen, Inc.
Omaha—C. J. Abbott & Co.
Philadelphia—Atlantic Aviation Service, Inc.
Portland—Flightcraft, Inc.
Rochester, Minn.—Gopher Aviation, Inc.
Rochester, N. Y.—Page Airways, Inc.
Salt Lake City—Kemp & Kelsey Airservice, Inc.
San Antonio—Alamo Aviation, Inc.
Shreveport—Currey Sanders Aircraft Company, Inc.
Teterboro and East Boston—Atlantic Aviation Corp.
Topeka—Topeka Aircraft Sales & Service
Tulsa—Tulsair Distributors, Inc.
Vandalia—Ohio Aviation Co.
Van Nuys—Norman Larson Company
Wichita—Aircraftco, Inc.
Wilmington—Atlantic Aviation Service, Inc.
Youngstown—Youngstown Airways, Inc.

Qualified Service makes the FINEST *product* FINER

The Beechcraft owner can well take pride in the fact that he owns and flies one of the finest products of the Aviation Industry. He also has at his disposal the finest national service organization that is qualified by the Beechcraft factory to maintain all Beechcraft models in factory new condition.

At Certified Beechcraft Service Stations you will find skilled and efficient Beechcraft factory trained personnel, adequate equipment and facilities, factory authorized parts and accessories plus economical prices. Certified Beechcraft Service is an additional bonus you receive when you purchase a Beechcraft.

AIRCRAFTCO, INC.
New Municipal Airport
Wichita, Kansas

AIRCRAFTSMEN, INC.
Will Rogers Field
Oklahoma City, Oklahoma

ALAMO AVIATION, INC.
Municipal Airport
San Antonio, Texas

ANDERSON AIR ACTIVITIES
General Mitchell Field, Milwaukee, Wisc.
Truax Field, Madison, Wisc.

ATLANTIC AVIATON CORP.
Teterboro Airport, (25 minutes from Times Square)
Teterboro, New Jersey
Logan Airport, East Boston, Mass.

ATLANTIC AVIATION SERVICE
New Castle County Airport, Wilmington, Delaware

BUTLER CO., AVIATION DIVISION
Municipal Airport, Chicago, Ill.

CURREY SANDERS AIRCRAFT CO., INC.
Downtown Municipal Airport, Shreveport, La.

CUTTER-CARR FLYING SERVICE, INC.
West Mesa Airport, Albuquerque, New Mexico

GRAY AIRCRAFT SVC. CO., INC.
D. A. Cody, Service Mgr.
Love Field, Dallas, Texas

ELLIOTT FLYING SERVICE
Municipal Airport, Davenport, Iowa

ROD MORE AVIATION SERVICES
Cuddihy Field, P. O. Box 556,
Corpus Christi, Texas

ROSCOE TURNER AERONAUTICAL CORP.
Municipal Airport, Indianapolis, Ind.

J. D. REED CO., INC.
Municipal Airport, Houston, Texas

TOPEKA AIRCRAFT SALES & SERVICE
Municipal Airport, Topeka, Kansas

TRADEWIND AIRPORT CORP.
Tradewind Airport, Amarillo, Texas

TULSAIR DISTRIBUTORS, INC.
Hangar 8, Municipal Airport, Tulsa, Oklahoma

WINGS, INCORPORATED
Wings Field, Ambler, Pennsylvania
Philadelphia International Airport, Philadelphia, Pa.

To obtain the best service for your Beechcraft visit the Certified Beechcraft Service Stations listed.

Pilot Aids for Efficiency in the Cockpit

The author logged over 600 hrs. in the last 12 months demonstrating the Bendix "flying laboratory" DC-3 to pilots. In addition to its nose-mounted RDR-1 weather radar system, it has a complete PB-10A automatic flight system, which maintains and changes heading, attitude, track and altitude. By freeing the pilot of many of the mechanical chores of flying, it allows more time for efficient flight management.

NOTE: On the most recent visit to Dallas of the Bendix DC-3 "Flying Show Case," FLIGHT MAGAZINE editors on a demonstration flight with the crew set up an interesting "trip" featuring automatic flight as this DC-3 performs it all over the U. S. on year-round demonstration tours. Paul Arnold, Bendix pilot, describes his flying with the new Bendix equipment in the following discussion:

By PAUL ARNOLD
Pilot, Bendix Aviation Corporation

WE are bound from Teterboro, New Jersey, airport to Pittsburgh, Pennsylvania, and our clearance reads as follows: Cleared to Pittsburgh omni via Victor 30 and Victor 58, maintaining 6,000; cross Chatham marker at 2,000 and maintain 2,000 until 3 mins. west of Chatham. Contact Newark Radar for departure 120.5 after take-off.

Shortly after take-off, the Eclipse-Pioneer PB-10A autopilot is engaged and a course is set for homing on the Chatham low-frequency locator. At 2,000 ft., the autopilot's altitude control is engaged and the level-off is executed smoothly. Power is manually reduced to normal cruise. Our No. 1 omni receiver (Bendix MN85) is channeled to the Allentown-Bethlehem VOR station and the omni bearing selector is turned to a 278-degree course to ABL.

After passing Chatham, the aircraft is turned by means of the autopilot controller to a course of 278 degrees and the autopilot's Flight Path Control (FPC) switch is set to the VOR range position. In this set-up, the FPC receives the omni signal, filters the information and directs the autopilot to guide the aircraft toward the selected omni bearing (our heading).

Three minutes west of Chatham, we release the altitude control and the FPC's memory system smoothly returns the aircraft to the pitch attitude of our original climb while we manually apply normal climb power and go to 6,000 ft. There we level off and re-engage the altitude control so that the FPC memory system now remembers only level flight reference.

A glance at our Distance Measuring Equipment (DME) indicator tells us we're 30 miles from ABL. We note the time for a later ground-speed check. Meanwhile, the FPC has been directing the track of the aircraft along a 278-degree radial and showing a 7-degree drift correction angle by flying a 285-degree magnetic heading. Our true air speed is computed at 152 knots. Our DME now indicates 20 nautical miles to ABL — we have made 10 n. miles in 5 mins., so our ground speed is 120 knots. Our estimates from here on should prove quite accurate on the basis of such information.

As we approach Allentown-Bethlehem, we select the outbound course of 284 degrees on Omnimag No. 2. We pass through the zone of confusion still on automatic (range), then switch to Omni No. 2 on the control. The system now automatically tracks out on 284 toward Selinsgrove, drift corrections being made automatically.

We have been warned of some air-mass thunderstorms in the area between Selinsgrove and Phillipsburg so our airborne Bendix radar is on stand-by position. About 30 miles out of Allentown-Bethlehem, Omni No. 1 is channeled to Selinsgrove and we switch from Omni No. 2 to No. 1 for a 281-degree course to continue our automatic flight path. This selection and switching procedure is followed right through to Pittsburgh.

Twenty miles out of Selinsgrove, our radar begins picking up some fairly heavy returns directly on our intended track. The set's iso echo contour circuit shows very definite thunderstorm formation. So we notify Phillipsburg of the storm's position and of our intention to circumnavi-

(Continued on page 41)

Bendix Pilot Paul Arnold, the author, is shown at right below during the Eclipse Pioneer exhibit and demonstration at Southwest Airmotive in Dallas. With him, left to right, are Reg Bell, engineer, and John Amos, sales, of Eclipse Pioneer. In two days at Dallas, they flew 100 persons including business pilots and personnel of Chance Vought, Convair, Temco, Texas Instruments, Braniff Airways and CAA. Southwest Airmotive is distributor and authorized service station for all Bendix aviation divisions.

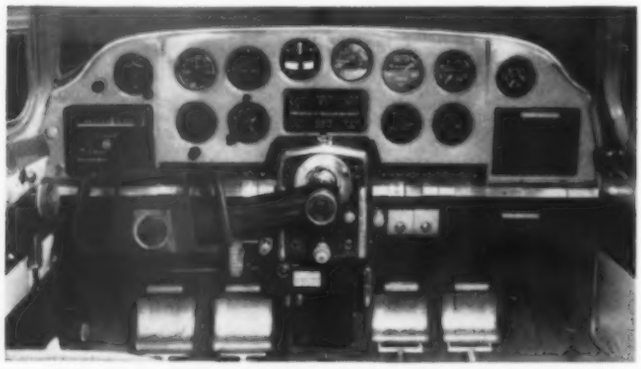
THE NEW MODEL F35 BONANZA FOR 1955

The greatest VALUE *on the market today*

. . . the 1955 Bonanza has been refined to matchless perfection and from any angle it's the finest, most practical design in a personal plane. The new Bonanza for 1955 offers speed **with** safety . . . power **with** ease of flying . . . all-metal durability **with** roomy comfort and combines many other advanced design features that make it years ahead in its field. The 1955 Bonanza is truly the greatest value on the market today.

★ With a cruising speed of 175 mph to 184 mph (depending on engine installed), the Model F35 Bonanza delivers *speed* but retains low fuel consumption of about 10 U. S. gallons per hour.

★ Built to carry efficiently a useful load of 1,053 pounds; with full tanks, there's plenty of available weight allowance for four people and baggage.



Complete instrumentation, arranged for maximum flying ease and efficiency — plus provision for easy installation of additional instruments.

Some of the New Features for 1955

A NEW Additional Window on each side provides even greater visibility, greater safety, and greater comfort.

ADDITIONAL Fuel Wing-Tanks, exclusive in the F35 Bonanza, provide ten more gallons of fuel in each wing. When installed, they provide greater range without loss of baggage space.

NEW Posture-Ease, Adjustable Seats for the Bonanza provide *the tops* in comfort for all passengers.

COMPLETE Exterior Painting is an exclusive standard feature of the Bonanza. The new F35 designs are offered in a wide array of attractive, durable and easy-to-see colors.

NEW Interior Styling for the 1955 F35 Bonanza provides the ultimate in design, quality of materials and workmanship.

You will find owning a Beechcraft is a paying business proposition. A phone call or a note on your letterhead is all that is necessary for a free demonstration by the J. D. Reed Company, Houston, Texas.

J. D. REED CO. INC.
SALES SERVICE
Beechcraft
MUNICIPAL AIRPORT
HOUSTON, TEXAS

Ask the pilots with the most experience . . .

Joan Tesch and Albert Swartz, co-owners of the Sky-Way Crop Dusting Co., stand with one of their crop-dusting fleet.

ask Albert Swartz . . .
ask Joan V. Tesch . . .

CO-OWNERS AND PILOTS FOR
SKY-WAY CROP DUSTING COMPANY, MARSHALL, MICHIGAN

Joan V. Tesch, possibly the only lady "crop duster," says: "I've flown the last 8 years with Gulf products. There aren't any aviation products better for our specialized type of flying."

Albert Swartz says: "I've been an exclusive user of Gulf Aviation Products for the last 4 years. I consider Gulf Aviation Gasoline and Gulf Oils as real insurance against engine trouble."

GULF
AVIATION PRODUCTS

For safer flying, get acquainted with...

Gulf Aircraft Engine Oil, Series-R
For radial engines, or where a detergent oil is not desired. Approved by Pratt and Whitney and other radial engine manufacturers for all types of service. Retards sludge and carbon formation and retains its body at high operating temperatures.

Gulfpride Aviation Oil, Series-D
For horizontally opposed and Ranger in-line engines. Minimizes ring and valve sticking, oil consumption, oil-screen clogging and plug fouling. Users of this great detergent oil have increased periods between engine overhauls by as much as 100%.

Gulf Aviation Gasoline
It's "refinery-clean" for your safety because Gulf Aviation Gasoline dispensing units are equipped with advanced Micronic Filters.

GULF OIL CORPORATION · GULF REFINING COMPANY

FIRST AIR FORCE JET ENGINE OVERHAUL CONTRACT for a fixed-base operator has been awarded to Southwest Airmotive in Dallas, calling for more than 1,200 Allison J-33-A35 jets to be overhauled at a cost of $3,000,000. One of the engines is shown above being examined by Winston Castleberry, Southwest Airmotive vice president (second from left) and others. Tooling and other preparatory work costing a million dollars includes a 10,000-sq. ft. test and shop building being erected at Amon Carter Field, 12 miles west of the firm's main engine plant on Love Field.
—(Southwest Airmotive Photo.)

AIR REPORT

(Continued from page 8)

and missile components. It has been developing the new automatic rudder control for several years and has sought patent protection for the Gyro-Stabilizer's unique features.

OVER $12,000,000 IN AIRCRAFT SALES for the first quarter of 1955 — that's the record of Air Carrier Service Corporation of Washington, D. C., a subsidiary of California Eastern Aviation, Inc. William W. Brinckerhoff, president of Aircar, said total includes purchase of two DC-4's from Pacific Northern Airlines and resale of one of them to Overseas National Airlines; sale of two new Convair 340's to Avensa of Venezuela; three DC-4's, spare parts and sixteen spare engines to Loide Aereo Nacional of Brazil; contract to supply three new DC-6B's and spares to Aerovias Brasil; and sale of a DC-3 executive transport to the king of Cambodia along with a cargo C-47 for the Cambodian government. . . . The king of Cambodia's private DC-3 is the third new royal executive plane mentioned in this magazine in recent months. Other two were a new de Havilland Heron for England's Queen Elizabeth and a new Aero Commander for the king of Yemen.

A NEW AUTOMATIC CARRIER LANDING SYSTEM has been developed by Bell Aircraft and Navy scientists. Several hundred fully automatic or "hands off" landings have been demonstrated with ACLS at a Navy facility with actual carrier tests expected soon. The new system will enable carrier planes to land in weather conditions which ordinarily, as during the Korean War, cause suspension of flying. It can also be used to land aircraft whose pilots are wounded or overly fatigued after long missions. Using radio and radar, ACLS first locates the plane to be landed. It then determines the plane's altitude and position in relation to the deck, computing speed and direction automatically. These figures are then fed into an electronic computer which compares the plane's position with what it should be. Course corrections are instantaneously determined and sent to a device which actually directs the airplane into the desired flight pattern by radio signals. Carrier speed, pitch and roll are also calculated. In case all factors are not correlated for a safe landing, the ACLS automatically sends the airplane around for another attempt.

A GENERAL DISCUSSION MEETING on April 13 in Washington has been scheduled by the Civil Aeronautics Board to hear comment on the Board's proposal to eliminate annual aircraft inspections. The proposal caused considerable comment, with disagreement on some of the proposed requirements.

MERGER OF CONTINENTAL AIR LINES AND PIONEER AIR LINES became effective April 1 with Continental operating both systems.

ROSS RIZLEY AND JOSEPH P. ADAMS are now chairman and vice chairman of the Civil Aeronautics Board.

NEW PLANE-TRUCK AIR FREIGHT OPERATIONS have been established by Slick Airways with new management control under Del Rentzel. Gordon M. Bain, formerly with the Civil Aeronautics Board, is executive vice president.

Max I. Black has been named sales manager of the **ROYAL AIRCRAFT CORPORATION**, a subsidiary of Kearney & Trecker Corp., Milwaukee machine tool manufacturer. Royal was formed last year for the purpose of assembling and marketing the Royal Gull, a twin-engine amphibian aircraft, in North and South America and U. S. possessions. Black, who served 30 years as a naval air officer prior to retirement in 1946, comes to Royal from the county of San Diego, California, where he served as director of aviation, and from the California Aeronautics Commission, as field representative. He has been demonstrating the Gull in the Dominican Republic and has scheduled East Coast, Gulf Coast and West Coast tours.

THE BOEING VICTORY IN JET TANKER COMPETITION has boosted its Air Force orders for jet KC-135 tankers to about $700,000,000. Among other competitors, Lockheed's tanker won a design and development contract. The action puts Boeing and Lockheed in position for early commercial jet airline sales.

Double-Pane Window

Effective soundproofing is available from a new type of double-pane cabin windows for executive transports. Called "Aero Plastic" windows and offered exclusively by National Aero Sales Corp. on Chicago's Midway Airport, 5300 West 63rd St., Chicago 38, they are not hermetically sealed but are nearly so, having a minute hole at the top of each window allowing sufficient air to pass to prevent collapse at altitude but so small that no moisture or dust will enter. Gap between panes is five-eighths of an inch. They are available for Aero Commanders, Beech 18's, Lodestars and DC-3's at prices ranging from $285 to $450. O. B. Callan, general manager of Aero Sales, says he conducted a competetive decibel test in which his Aero Commander with the windows and cruising on two engines proved to be up to 2.5 decibels quieter than four other types of twins which were flown on one engine each at cruise and one engine feathered. Picture below shows double-pane construction of the new window.

Over 150,000 Radioplane RECOVERIES by PIONEER PARACHUTES

Radioplane Company of Van Nuys, California, a subsidiary of Northrop Aircraft, Inc., manufactures most of the pilotless target airplanes used by the United States Armed Forces. Pioneer Parachute Company is privileged to be a major supplier of parachutes for Radioplane targets.

The Pioneer Parachute Company, through its engineering staff and departments for the manufacture of special purpose parachutes, works closely with Radioplane Company, as well as other leading aviation companies, in the development and manufacture of parachutes of all types for all purposes.

PIONEER PARACHUTE COMPANY, INC.

MANCHESTER, CONN., U. S. A. *Cable Address PIPAR*

In Canada: PIONEER PARACHUTE COMPANY OF CANADA, LTD., *Smiths Falls, Ontario*

PARACHUTES MAKE THE DIFFERENCE!

Southwest Factory Branch
Love Field
Dallas, Texas

Always Ready To Go

Hundreds of Cessna owners all over the country depend on the Authorized Cessna Service Stations listed below for their transportation needs—Authorized Cessna Service is their assurance that business planes are always ready to go, always in top condition for reliability, performance and comfort.

Every Cessna owner is guaranteed three important things by our factory-supervised Cessna Flat Rate Service:
(1) You get an accurately quoted price and time-required quotation based on hundreds of job studies covering virtually all maintenance needs.
(2) You get genuine Cessna parts and factory-trained workmanship.
(3) You save money and time and we stand behind every job for your fullest satisfaction.

To make the most of your Cessna's usefulness, visit the Authorized Cessna Service Stations listed below.

These progressive Cessna Authorized Service Shops offer flat-rate service.

Aircraft Sales Company
Meacham Field
Fort Worth, Texas

Champ's Aviation, Inc.
Municipal Airport
El Paso and Lubbock, Texas

Clinton Aviation Company
Stapleton Airfield
Denver, Colorado

Cruse Aviation, Inc.
Municipal Airport
Houston, Texas

Dal-Tex Aviation, Inc.
Highland Park Airport and Love Field
Dallas, Texas

Hair Flying Service
Harding Field
Baton Rouge, Louisiana

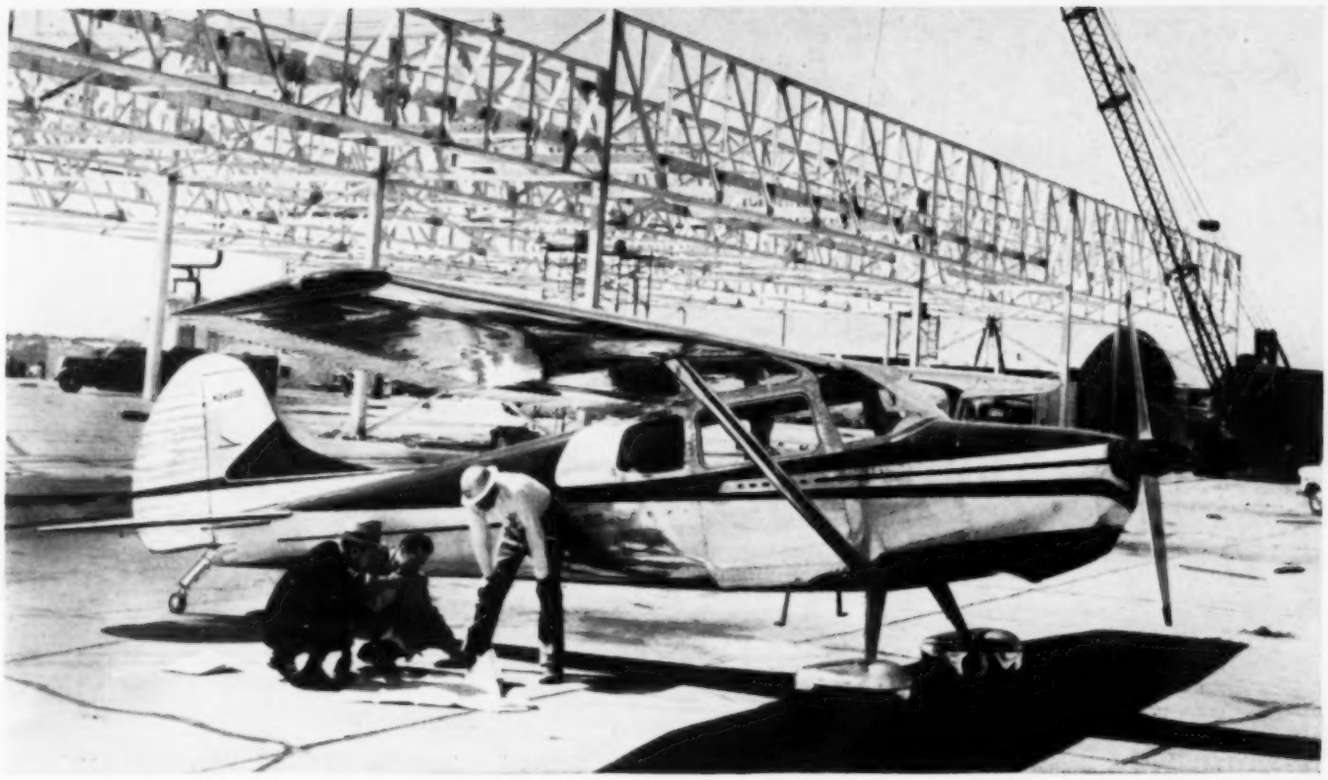
Howard Aero Service, Inc.
San Antonio International Airport
San Antonio, Texas

Ragsdale Flying Service
Municipal Airport
Austin, Texas

Southwestern Skyways, Inc.
New Municipal Airport
Santa Fe, New Mexico

Kenneth Starnes Aviation Service
Adams Field; Little Rock, Arkansas

Yingling Aircraft, Inc.
Municipal Airport
Wichita, Kansas



All-metal strength...Lowest Price!

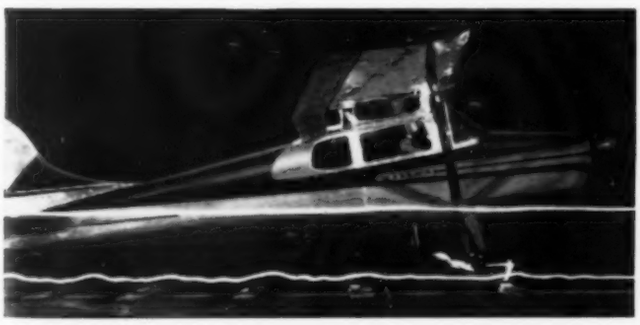
Cessna

At only $8,295, the Cessna 170 is the only airplane in the low-priced field that offers all-metal strength, all-metal weather protection!

The 170's riveted seam all-metal fuselage is built like the airliners. It will be as strong, look as factory-fresh years from now. Withstands rugged abuse, saves on maintenance. Adds important dollars to resale value.

Absolutely the lowest priced 4-place, all-metal, airplane on the market.

In addition to the all-metal value there are over 100 extra features on the 1955 Cessna 170 that you won't find on any other low-priced airplane. See your Cessna Dealer now. (He's listed in the yellow pages of the phone book.) Or write CESSNA AIRCRAFT CO., Dept. FM-4, Wichita, Kansas.

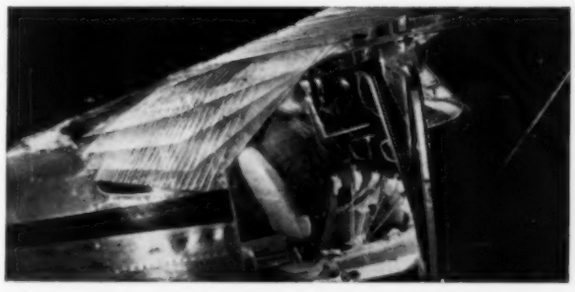


Smoothest, Safest Landing Gear

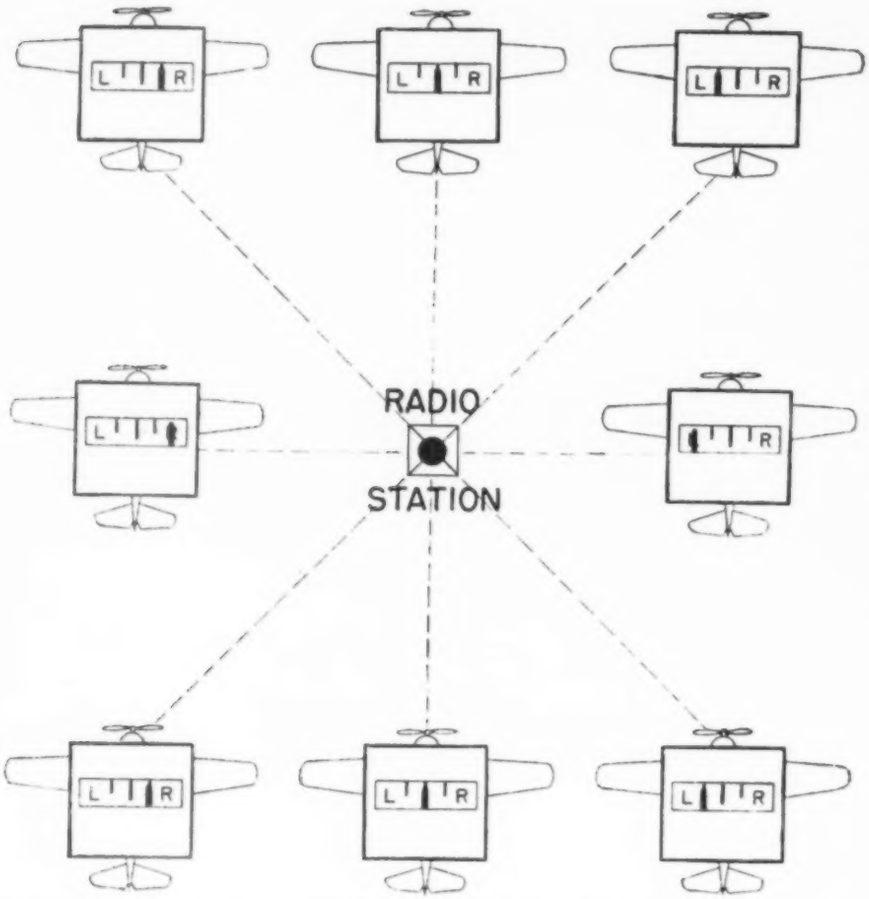
See how landing and take-off shock disappear between Cessna wheels and the cabin! Exclusive patented landing gear "flexes" to absorb shock. No complicated parts. Nothing to wear out. Famous Goodyear Castering Gear—optional now for only $245—makes cross-wind take-offs and landings easier, safer! New *steerable* tail wheel simplifies taxiing!

Longest, Widest Flaps

in the low-priced field! . . . There is more flap area on the Cessna 170 than you'll find on any competing airplane! Easily operated through 4 positions. Cessna "Para Lift" flaps give a 170 the shortest landings, quickest take-offs of any low-cost airplane. And they're standard equipment!



CESSNA 170 180 195 310 THE COMPLETE AIR FLEET FOR EVERY BUSINESS NEED!



Using the left-right indicator of the Electronic Direction Finder, this sketch shows how the needle is followed. Audio signal increases as plane nears the station, decreases as it flies away from station.

As installed in a standard instrument cut-out in FLIGHT MAGAZINE's Cessna 170, here's the 10-channel, 11.5-ounce Aerotron VHF transmitter.

Low-Cost Radio Aids

NEW low-cost radio aids now being marketed by Air Associates give promise of making major communication news during 1955. One development, a 10-channel VHF transmitter selling for only $79.50, is going like the proverbial hot cakes. Its companion gadget, an Electronic Direction Finder (EDF they call it) has a price mark of $189.50. Both pieces of equipment are "parasitic" in that they operate from power of standard radio equipment, the Aerotron Model 200 VHF transmitter from an existing radio transmitter or transceiver and the Aerotron Model 367 EDF from any standard low-frequency aircraft receiver.

The VHF transmitter comes equipped with five of the most commonly used crystals. Provision is made for five more crystals of the owner's choice. Weighing only 11½ ounces, the Aerotron fits in a standard small instrument hole of only 2¼ inch diameter.

The installation in FLIGHT MAGAZINE's Cessna 170 was made not only for the purpose of having a spare transmitter but also to provide more transmitting frequencies than available through the Narco Omnigator. Power comes from the Lear ADF-12 installation. Cost of installation was $27.50. Satisfactory communications have been carried on with omni stations as far away as 80 miles from an altitude of 4,000 feet.

The Model 367 Aerotron Electronic Direction Finder weighs only 3 pounds and operates from a fixed loop mounted internally or externally. It also fits a standard small instrument hole on the panel. Frequency range is 190 to 1750 kc., limited only by the tuning range of the receiver to which it is attached.

Once the desired station is tuned in and identified, the aircraft is flown to the needle on the Left-Right indicator — fly to the left for an "L" indication and fly right for an "R" indication. A pronounced low audio-frequency tone or "flutter" will be observed in the loudspeaker or headphones when the needle is not centered. When the aircraft is headed directly to (or from) a station, the needle will be centered and the audio tone will disappear. The audio tone provides a secondary check on accurate course since it is immediately discernible through the headphones or loudspeaker when the aircraft is off-course even though displacement of the L-R needle is not noticed. As is the case with any visual Direction Finder, it's good practice to monitor the station being used for visual guidance since fade-out or interference with the station being homed on can cause navigational error if not immediately corrected.

As signal strength of the station being homed on increases, maximum increase is of course right at the station. After passing over the antenna there is a rapid fade-out (cone of silence), then a gradual decrease in departing.

Since the Model 367 EDF makes use of all types of low frequency sets it may be necessary to keep readjusting the receiver volume control to keep volume at a normal level. Both the volume control and the course sensitivity control will affect the course sensitivity. Normally it is necessary only to set the volume at a comfortable level and then adjust the course sensitivity control as desired. In rough air, however, it may be impossible to fly the EDF without excessive hunting if the course sensitivity control is set at its most sensitive position. ★★★

Up front in the Turbo-Prop Race

Allison Model 501 for commercial use develops more power for its size and weight than any other Turbo-Prop engine built today

Pay-off on ten years of Turbo-Prop pioneering is the Allison Model 501 engine, commercial version of the T56 which recently completed the most exacting model test ever required of a propeller-type engine.

Now in production, this engine develops 3750 horsepower, or 2.3 horsepower per pound of weight—a power-to-weight factor better than any other Turbo-Prop engine available today, and almost 2½ times that of contemporary piston engines.

In a typical application, the Allison "501" saves one ton of weight per engine nacelle, and has an engine frontal area of only six square feet—less than half the frontal area of a reciprocating engine with comparable power. Its amazing compactness cuts speed-reducing nacelle drag as much as 60%.

These advantages will enable cargo transports powered with these engines to carry heavier payloads faster at far less cost than present aircraft.

And in passenger operation, smooth-running Allison Turbo-Props will provide quieter, more comfortable flights—and permit speeds better than 7 miles a minute.

Allison Turbo-Props are engines *in being*—not merely on paper. They are the first American Turbo-Props being built and delivered in production quantities, and have to their credit more actual flight experience than all other U.S. Turbo-Props combined.

ALLISON Division of General Motors
Indianapolis, Indiana
Builder of Turbo-Jet and Turbo-Prop Aircraft Engines

GM
GENERAL MOTORS
AIRCRAFT POWER

Allison

TURBO-PROP ENGINES

More than five-and-one-half million hours of turbine engine flight time . . .

experience where it counts most—**in the air!**

ASSOCIATED EXPLORER

(Continued from page 18)

The White brothers are adamant in their belief that the only efficient way to hunt uranium is to haul everything you need in one airplane. This business of locating an anomaly by air and then days or even weeks later having the ground crews struggle in to the "find" to core-drill and assay the samples is not for them. Nor do they go along with the theory that airplane exploration need be limited to rim flying or to outcroppings. By the use of large crystals in the Mt. Sopris scintillation equipment, the Explorer is capable of detecting uranium bodies hidden below the surface. The Atomic Energy Commission employes in the Utah-Colorado plateau country agree that many anomalies are passed over by aerial exploration because of the "overburden" of non-radioactive earth. Hence the common practice of flying the rims and outcroppings only.

The fully equipped Explorer is a veritable flying laboratory. Each of the four principal sources of information, which include the scintillation counter, the radio altimeter, the airborne magnetometer unit and the radar for orientation, has its own automatic recorders. The radio altimeter, which gives absolute altitude, is hooked in synchronization with the scintillation counter recorder. The airborne magnetometer unit — mounted in a plastic case on the wing tip — has its own recorder and is chiefly valuable for tracing or defining the ore or petroleum body. The airborne radar also has its own recorder and is used for orientation, providing pin-point location and plotting at all times so that the scintillation and magnetometer readings can be accurately charted. One would think the above four pieces of scientific equipment, each with its own recorder, would just about solve all the problems involved. But the White brothers, who border on the perfectionist, include an electrically operated 16 millimeter motion picture camera mounted in the belly of the ship and synchronized to one of the charts in about the same way a camera is mounted in synchronization with a machine gun. Every time the chart moves to a predetermined spot, a striker bar on the side of the chart trips the camera, thereby providing a photographic record of the terrain below, easily correlated with the chart readings of the other instruments.

The White brothers also believe, as a result of their observations in the uranium hot spot out West, that 55 to 60 miles an hour is the most efficient speed for survey work due to what is commonly referred to as the "statistical fluctuation of the counting rate." Boiled down to simple English, this means that the uranium ore radiations are emitted at random or irregular intervals and therefore the number of counts measured by a suitable detector in one time interval will usually be different from that measured during another, equal, interval. Thus the emission characteristic of the source of radiation can introduce appreciable error into the reading. This variation in counts per unit of time is the statistical fluctuation of the counting rate. The airborne counter, unlike the groundborne counter, must be capable of indicating small changes in count rate and the limit of detectability will be that increase that can be seen in the statistical fluctuation of the background count. An airplane flying faster than 60 or 70 miles an hour might easily lose the anomaly and that's one of the major drawbacks to most airplanes now being used in the high plateau.

Performance to Spare

The huge "gooney bird" wing of the Explorer with slots and flaps is a natural for slow flight, as well as for jack-rabbit take-offs and short pea-patch landings. Only the helicopter needs less landing and take-off room than the Explorer. We made four flights in the first production model and were duly impressed with the amazing short landings, take-offs and climb-outs. Most readers have seen such airplanes as the old German Fiesler "Storch," the Ryan "Dragonfly," Lynn Bollinger's "Helioplane" and the small military liaison craft run fifty to one hundred feet and literally jump into the air. The Explorer is in the same class, except for the 450 Wasp in the nose, which makes it go almost straight up, pulling 36 inches of mercury at an indicated air speed of from 50 to 60 mph. Power off, she stalls at 37 mph. Supercharged, the Wasp still puts out over 200 horsepower at 20,000 feet.

ZERO LAUNCHING of the Chance Vought Regulus guided missile is accomplished with the use of a mobile truck as a platform. This scene was photographed aboard a Navy aircraft carrier in recent tests.
—(Chance Vought Photo.)

From what little we know about rim flying in the high plateau country, we can readily appreciate the need for spare horsepower to fly out of a box canyon or hop over a rugged obstacle in the hot, thin air. There are dead pilots whose friends can attest to that.

Almost as impressive as the climb and slow-flight characteristics of the Explorer is the commodious cabin and weight-lifting ability. It's difficult to believe unless you see it. Imagine a single-engine airplane capable of toting 1,500 pounds of drilling and scintillation equipment, a pilot, an instrument operator and enough gasoline for 5-6 hour range! There's still space for a water barrel, sleeping bags and sour dough rations to allow camping out, plus tool boxes, spares, lanterns and assay kits. Both sides of the Explorer's fuselage may be detached or opened up on hinges in a matter of minutes. It is truly a one-stop uranium hunter.

One desirable feature of the military version which the White brothers kept in their design is the fold-back wing and tail surfaces. If necessary to anchor the airplane in case of violent weather, or store it in compact space, the wings can be folded back against the fuselage, while the elevators and horizontal stabilizers can be folded up alongside the fin.

To our personal knowledge there are two of the unmodified 245 Franklin L-13's operating as dusters, one in Nicaragua that carries 2,500 pounds of dust over sea level banana plantations, and another operating in the higher terrain of Oregon that carries 1,800 pounds. Associated's souped-up and beefed-up model that provides 450 horses with only an additional 235 pounds to the empty weight certainly speaks highly for the White brothers' engineering. And in all probability it can lay claim to the envious distinction of being the most realistic uranium hunter yet devised.

While the uranium "bug" has bitten thousands upon thousands of people, very, very few have narrowed the mad search for the precious atomic fuel to an exact science. It is clear from the development of Associated Airmotive's Explorer that something constructive is being done in the greatest mineral hunt in history where the door is wide open for improvement, especially in the fruitful adaptation of aircraft not only to the discovery of ore bodies, but to the myriad of work-horse jobs involved in such operations. ★ ★ ★

FOUGA MAGISTER

(Continued from page 21)

engine control instruments 48, accessory gear box 40, seat and miscellaneous equipment 66, navigation and flight control instruments 84, services 415 and safety equipment 13).

Weights According to Missions

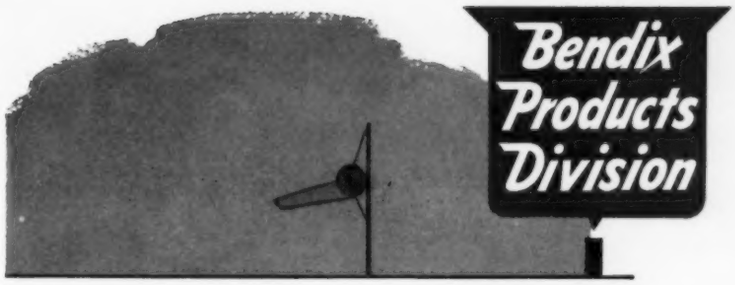
Five variations in missions are provided for, being (1) gunsight practice with student and instructor, (2) gun and rocket firing with student having 200 rounds per gun and 4 rockets, (3) blind flying training with hood, (4) jet aircraft and altitude flying training with solo student, and (5) ferry flight with tip-tanks fitted carrying 34 U. S. gals. each.

Weights for these missions vary as follows:

	No. 1	No. 2	No. 3	No. 4	No. 5
Empty Wt.	4,268	4,268	4,268	4,268	4,268
Interphone and Radio	143	143	143	143	143
Lighting	20	20	20	20	20
Armament Controls	53	53	35	35	53
Machine Guns	..	37	..	..	37
Bomb Racks	..	..	..	..	26
Rocket Launchers	..	18	..	..	18
Gunsights	31	31	..	..	31
Air-conditioning, Oxygen	123	123	123	123	123
Blind Flying Hood	..	..	2	..	..
Extra Fuel Tanks	..	..	..	..	35
Crew	370	370	370	370	370
Fuselage Fuel and Oil	1,323	1,323	1,323	1,323	1,323
Tip-Tank Fuel	..	..	..	..	441
Ammunition	..	253	..	..	..
Luggage	..	..	..	..	88
Gross Wt.	6,331	6,639	6,284	6,097	6,976

Performance of the Magister is given by Fouga as computed from flight

FIRST RADICAL IMPROVEMENT in aircraft altimeters is this new counter type by Kollsman. Two-digit counter registers altitude in thousands of feet, pointer in hundreds with 50-foot intervals. Setting above shows 9,565 ft. for quick, precise reading.
—(Kollsman Photo.)



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General Aircraft Supply Corporation
Detroit, Michigan

Pacific Airmotive Corporation
Burbank, California

Pacific Airmotive Corporation
Oakland, California

Pacific Airmotive Corporation
Kansas City, Kansas

Pacific Airmotive Corporation
Seattle, Washington

Southwest Airmotive Company
Dallas, Texas

Standard Aero Engine Ltd.
Winnipeg, Canada

Standard Aircraft Equipment Co.
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Van Dusen Aircraft Supplies
Minneapolis, Minnesota

REDUCE YOUR PARTS INVENTORY, INCREASE OPERATING EFFICIENCY . . .

by calling the Bendix Distributor nearest you!

The services of authorized distributors handling parts and units for Bendix* carburetion systems or landing gear equipment can mean a great deal to fixed-base operators.

For by buying through the nearest Bendix Distributor, fixed-base operators can reduce inventory—eliminate follow-up costs—economize on transportation—keep obsolescence at a minimum—reduce product deterioration, insurance, storage space and taxes.

Sounds like a lot to promise, but if you will get in touch with your nearest Bendix Distributor, he will be glad to demonstrate just how the program works.

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Struts, wheels, brakes and Cerametallic brake lining.
Injection and float-type carburetors, direct fuel injection systems.

BENDIX PRODUCTS DIVISION **SOUTH BEND, IND.**

THE NAME Bendix AVIATION CORPORATION STANDS FIRST

tests. Figures include the following:

(Without External Stores and at Average Take-off Weight of 6,280 Lbs.)

Max. Spd., Sea Level, mph.	423
Max. Spd., 30,000 ft., mph.	444
Max. R/C, Sea Level, fpm.	3,350
Time to 30,000 ft., mins.	16
Ceiling, ft.	40,000
Take-off Run, ft.	2,150
Distance to Clear 50 ft., ft.	2,600
Range at 30,000 ft. (32-gal. reserve), miles	570
Duration at 30,000 ft. (32-gal. reserve), mins.	115

(With Extra Fuel Tanks and at 6,830-Lb. Take-off Weight)

Max. R/C, Sea Level, fpm.	2,925
Ceiling, ft.	34,000
Take-off Run, ft.	2,150
Distance to Clear 50 ft., ft.	3,100
Range at 30,000 ft. (32-gal. reserve), miles	750
Duration at 30,000 ft. (32-gal. reserve), mins.	160

With the foregoing as background, a typical mission in the Magister proves to be an interesting study. This example is for the No. 1 mission for which weights and equipment are furnished in the preceding tables but, as the reader will note, is not based on maximum performance values. As the Fouga factory figures it, the mission is as follows:

Taxiing out, 5 mins. and 5 gals of fuel.

Take-off and climb to 20,000 ft., 9.5 mins., 60 miles and 36 gals of fuel.

Cruising flight at 20,000 ft., 56.5 mins., 357 miles and 122 gals of fuel.

Let-down to 2,500 ft. with engines throttled back and air brakes extended, 1.5 mins., 8 miles and 3 gals of fuel.

Holding at 2,500 ft., 5 mins. and 9 gals. of fuel.

Totals for trip: 425 miles covered in 82.5 mins. at fuel consumption of 180 gals., leaving only 12 gals. of fuel remaining in the fuselage tanks (no tip-tanks on this mission).

Going back over Fouga's information, the business pilot in the U. S. finds the prospect for travel in a light, twin-jet civilian airplane very interesting. It offers two of the prime essentials — speed and pressurization — for progress. It also introduces problems of fuel management and immediate landing clearances from airport controllers. Where to put all the fuel is the problem which aircraft designers will be tackling in future business plane projects, for the Fouga may be considered as typical of all current light jets — the fuselage carries more fuel capacity than the wings. ★ ★ ★

NEW NOSEWHEEL STRUT is now standard on Aero Commanders. It is cleaner, stronger and allows a 90-deg. swivel for turning inside the wheel. Power steering with rudder pedals is featured.

2500 AD SKYRAIDERS in 10 years have been delivered by Douglas Aircraft to the Navy, which uses it as the standard attack bomber. Skyraider can carry 10,000-lb. load, which exceeds that of 4-engine Boeing B-17.
—(Douglas Photo.)

and so is dual omni!

When you're doubly geared for action, any job can be made *twice* as easy . . . and dual ARC Omni installations double flight efficiency, increase the pilot's confidence in navigation. With dual omni 15D equipment, a single pilot can make a fix *faster* . . . he can fly any omni track while also cross-checking for position. It's easier to make transition from omni to runway localizers.

With two pilots, the work can be shared for greater ease, by using both omni instruments simultaneously for different jobs.

ARC 15D Omni is compact, lightweight, CAA certified, and now employs new course indicator which combines course selector and cross-pointer meter in a single space-saving unit.

Lighten the load with ARC DUAL omni. Data on request.

Dependable Airborne Electronic Equipment Since 1928

ARC **Aircraft Radio Corporation**
BOONTON, NEW JERSEY

Omni Receivers • 900-2100 Mc Signal Generators • UHF and VHF Receivers and Transmitters • 8-Watt Audio Amplifiers • 10-Channel Isolation Amplifiers • LF Receivers and Loop Direction Finders

COCKPIT EFFICIENCY

(Continued from page 29)

gate the storm cells. This is done with relative ease (even a squall line becomes less formidable because we can see the definite outline of each cell and can plot our way through the least turbulent zones).

As we arrive in the Pittsburgh holding pattern, we reduce power. Altitude control maintains our altitude. Power is set for holding air speed. We are cleared from 6,000 to 4,000. The altitude control is released and pitch trim is rolled forward for a desired rate of descent. Upon reaching 4,000, the altitude control is again engaged. But we continue to let down as instructed for our approach. We now channel Omni No. 1 to the Pittsburgh ILS and select the 321-degree inbound heading of the localizer on the Omnimag.

Our procedure turn is made with maneuvering flaps and we make our pre-landing check complete except for lowering the gear. The Omnimag tells us we are now approaching the localizer at a 45-degree intercept angle. When the localizer needle leaves the peg, we select localizer position on the control switch and are automatically capturing the localizer course. ADF No. 1 is on the outer locator.

As we approach the glide path, we select "localizer and glide path" on the control switch. The altitude control is released automatically by this action. We then lower the landing gear and release the throttle locks — this action automatically engages the throttle servos and the throttles now control our position on the glide path by smooth application of removal of power as required.

Our approach speed is controllable to suit conditions — to increase air speed, pitch trim is rolled forward (down elevator) and to decrease speed, pitch trim is rolled back (up elevator).

When the accepted minimum altitude is reached, the complete system is disengaged by a switch on the control wheel. When this release switch is pressed, the aircraft is returned to the pilot in a perfectly trimmed condition for landing. All the pilot need do is complete the flare-out and land.

These new automatic systems and weather radar place at the pilot's disposal a new concept of instrument flying, giving him more time to conduct a safer, smoother and more efficient operation. These are proven aids that will help see him through when the chips are down. ★ ★ ★

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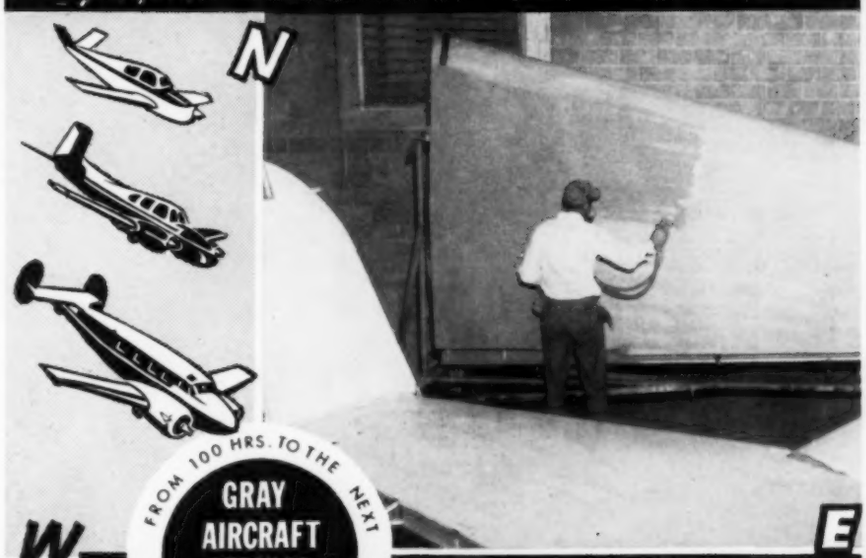

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7 Engine Forums in 1955

PRATT & Whitney Aircraft will launch its seventh annual series of engine operation and maintenance Forums on April 27 with the first clinic at the Pratt & Whitney Airport Department, East Hartford, Connecticut, for private and corporate owners and operators of aircraft.

Six other Forums will be held around the nation as follows: Pacific Airmotive, Oakland, May 17; Pacific Airmotive, Burbank, May 19; Northwestern Aeronautical, St. Paul, May 24; Airwork, Millville, N. J., Sept. 14; Airwork, Miami, Sept. 19, and Southwest Airmotive, Dallas, Sept. 21. ★ ★ ★

BELL'S URANIUM PROJECT

(Continued from page 19)

complete air-portable core drilling rig with which the flying prospector can substantiate any ore bodies which may be detected from the air.

"We can fly right down on the rocks with our helicopter at speeds as low as zero for hovering and we can land practically anywhere," Gaylord said.

A new-type scintillometer has been installed in the Bell. With a powerful detection device, counter and recorder, it weighs about 100 lbs. The helicopter also is equipped with a portable, 300-lb. "Mini-Drill" diamond rig which can drill core holes as deep as 300 ft. It and its pipe and equipment can be broken down into small components for ease of handling.

The aircraft firm is convinced its helicopters are the practical answer to the problems involved in rapid and accurate uranium exploration. "But we want to prove it to the prospecting and mining industry," Gaylord said. "It would be negligent on our part to sell untried equipment for this specialized work. It is a job for the manufacturer to keep his product in step with improved exploration techniques. While we are developing a service for the uranium industry, we are also establishing a successful pattern of operation for commercial charter services using our equipment. Thus we are keeping our faith in the helicopter field."

★ ★ ★

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Custom D18S

Big New Cockpit
Big Deluxe Cabin
Big Picture Windows

Immediate Delivery *

America's Most Beautiful D18S

Here is a completely new design for comfort and relaxation that you'll have to see. It will be delivered with a new ship guarantee on the airframe, and 800 hour guarantee on the engines. No time since complete overhaul on airframe, engines, surfaces, tanks, and wings. It is equipped with Sperry gyrosyn, autopilot, Bendix 2 way VHF, Omni-Mag, RMI, ILS, dual ADF, standby VHF, custom panels, nose tank, new de-icers, and many extras.

Here's a small ship version of the famous Remmert-Werner Executive DC-3, with as many of its features as we could pack into this already popular airplane.

***D18S OWNERS**—Most of the features of the new Remmert-Werner CUSTOM D18S are available for the improvement of your present plane — bigger cabin, bigger cockpit, special chairs, snack bar, etc. Write for an estimate.

A New

Super-92 DC-3
N39F

ready for early April delivery

New ship guarantee, complete 8000 hour overhaul, SUPER-92 engines, Collins radio, beautiful custom interior, 200 mph.

Similar models available with other engines of
R1820—at lower cost
R1830—at varying costs
R2000—at higher cost

Write or call for estimate

Executive Lodestar

New relicense, NTSO R1820-56
Dual Fuel, Dump Chutes, Tight Tanks, 800 gals.
Down Latches, De-icers, 24 volt
Dual Instrumentation, Custom Radio Panel
Autopilot, Collins 51R VHF and Omni, with ILS
ARC-1 50 ch. 2-way VHF, and A.R.C. standby
Dual ADF, Isolation Amplifier and Speaker
Late Manufacture, traded in on Super-92 DC-3

REMMERT-WERNER, Inc.

PErshing 1-2260 — Lambert Field — St. Louis, Missouri
JAckson 3-2950 — Fort Lauderdale, Florida

HELIVECTOR

(Continued from page 23)

cylinder outboard racing boat motor, modified for Prestone cooling. It weighs less than 50 lbs. and delivers about 20 hp.

It drives 15-ft. diameter counter-rotating blades which are mounted below the pilot and engine on an inverted mast, using a free-wheeling clutch, a power clutch and gearing. Below the rotors is the craft's amphibious landing gear, a nylon container inflated by an aircraft innertube and having outriggers of inflated plastic cells.

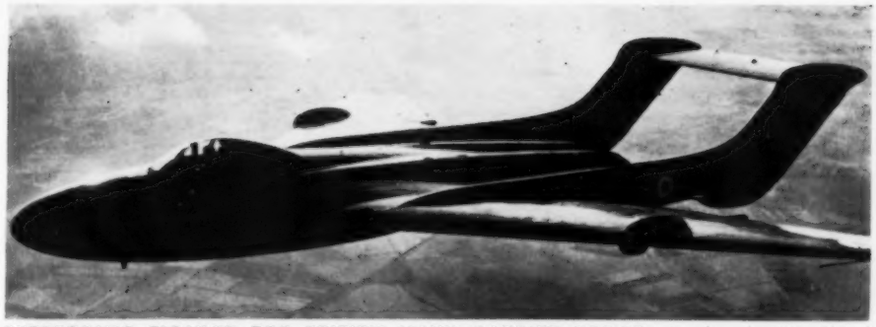
The pilot flies standing up, his feet in ski-like straps on two troughs and his body safety-belted to the control column. This control column also serves as the fuel tank, containing "a gallon or so" of fuel in which lubricating oil is mixed, outboard motor fashion. At the top of the column is a handlebar as on a motorcycle. The only instrument is a tachometer.

Empty weight is said to be about 125 lbs. Gross weight is about 385 lbs.

Top speed is said to be 90 mph., with 60 mph. for cruising. Ceiling is 10,000 ft.

The engine has an outboard motor cord starter but it is mounted at the base of the column so that the pilot starts it by pulling the cord upward.

Explaining the craft, de Lackner



SUPERSONIC FIGHTER FOR BRITISH NAVY CARRIER FORCES is the de Havilland 110. It is powered by two Rolls Royce Avon jet engines, carries elaborate electronic aids for interception and is armed with 30-mm Aden guns and guided weapons.
—(British Information Service Photo.)

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During recent years the LOCAL SERVICE AIRLINES have become a **new major market** for equipment, accessories, products and services that contribute to the further development and advancement of the facilities and service they offer the smaller communities.

The SIXTH ANNUAL LOCAL SERVICE AIRLINE EDITION, to be published by FLIGHT MAGAZINE in the JUNE 1955 issue, will reveal the background behind the phenomenal growth and expansion of this segment of the nation's air transportation system. The statistics in this authoritative edition will reveal that in the 1950-1954 period, the total passenger revenue increased 149.1% and the commercial revenue increased 166.7% while operating expenses only increased 103.1%. In this same period the number of employees of the local service carriers increased 55.4% and the aviation gasoline consumption increased 82.5%. These and many other vital statistics will be presented in this documentary issue, the only published source for complete information on LOCAL SERVICE AIRLINE operations.

Every branch of the Aviation Industry will focus its attention of this significant presentation. Here, then, is the opportune place to be represented with your advertising sales message. The JUNE 1955 issue of FLIGHT MAGAZINE is the **ONLY MEDIUM** that can offer 100% penetration of this lucrative expanding market. Make your space reservation today in this edition for increased sales in the months to come.

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says: "Any aircraft is unstable without controls. In this one, the pilot shifts his weight and this tilts the rotors' plane of rotation in relation to the horizon. What happens is that this change in weight determines the relation of the lift vector to the thrust vector for directional control.

"Counter-rotating blades cancel out the torque and gyroscopic precessional forces, eliminating the need for a tail rotor. Speed can be varied for the two rotors by the use of the handlebar for differential rpm. This variation allows the platform to rotate to the heading desired by the pilot. If he is flying north, for example, he can turn the handlebar to the east and the platform will rotate to the east for his new heading. He then leans forward, and this tilts the plane of rotation ahead for forward flight. If he tilts his weight to the left or right, the helivector moves sideways, or backwards if he leans rearward. To hover, he maintains his perpendicular balance while he adds power. A freewheeling clutch allows autorotation for a landing in power failure emergencies.

No other controls are used, de Lackner said, explaining that the usual complications of a helicopter rotor head are eliminated.

The helivector is intended for military use in aerial scouting or the movement of men, each on his own machine, over fortifications, resistance points or difficult terrain in brief flights and over short distances.

Fuel allows about 45 minutes of flying.

★ ★ ★

VHF AUTOMATIC DIRECTION FINDER for airports is being marketed by Olympic Radio and Television, Inc., Long Island City, New York. Features are low cost, light weight and indicator receiver accuracy. Signal from an airborne transmitter causes needle to point to aircraft's position. Operator then gives pilot heading to airport.

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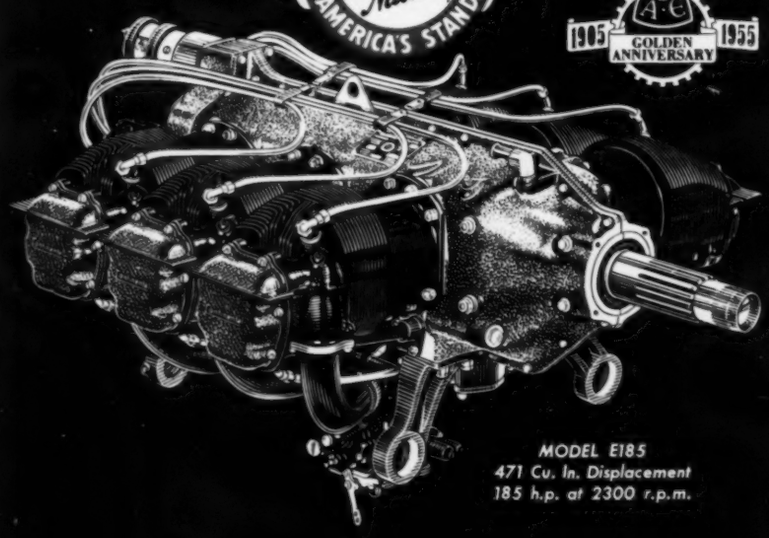

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Continental's Remanufacturing Plan, available through 125 master distributors with dealers at practically all airports, provides a new factory-remanufactured engine—back to zero hours and with factory engine guarantee—with virtually no dead time and at a low fixed cost.

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Perfect as a basic communication set, perfect as a second, separate auxiliary radio, the NARCO Simplexer is a versatile unit with wide-band 12 channel VHF transmitter (108-127 megacycles) and VHF receiver.

Its exclusive "whistle-stop" tuning feature lets you find desired frequencies with the same positive precision as with far more expensive crystal-controlled receivers.

Thousands of dependable, ruggedly-built Simplexers are in daily use in multi- and single-engine business planes. For reliable, dependable long-distance communication, specify Simplexer. Compact, easy to install.

OMNIPLEXER
Adds OMNI Navigation function to SIMPLEXER utility

This 2½ pound "pancake-designed" Omniplexer can be plugged into any existing Simplexer to give accurate Omninavigation. Dual function left-right/to-from indicator contributes to compactness; vernier control assures accurate course selection.

The Omniplexer/Simplexer combination provides a perfect navigation and communication package and permits addition of dual Omni at surprisingly low cost.

Omniplexer attachment . . . . . only $195

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NATIONAL AERONAUTICAL CORPORATION
Ambler, Pennsylvania

Questions and Answers for Operators

Your Place in Aviation Conferences

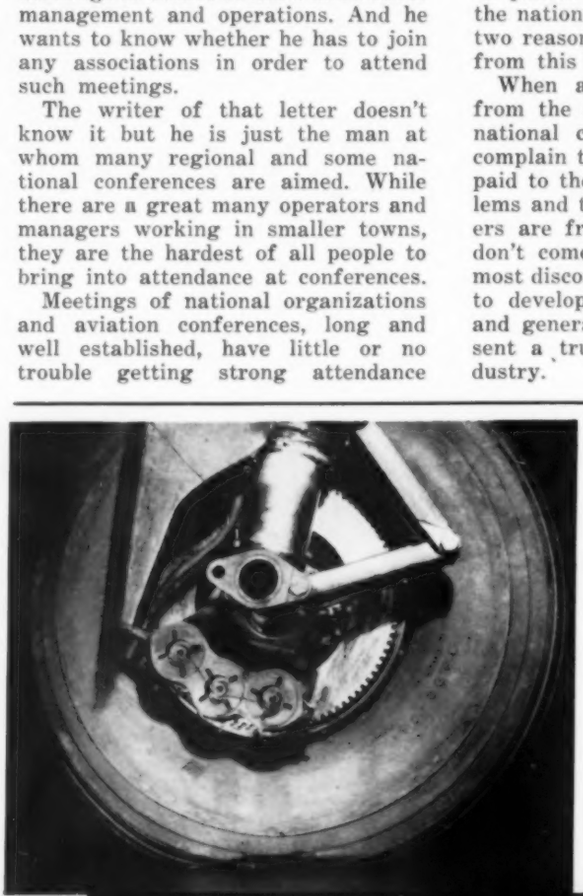
WE are devoting the column this month to aviation meetings, conferences and conventions, especially those which are aimed at the improvement of airports operations and management. The inspiration comes from a letter from an operator-manager in a town of some 10,000 people. He wants to know what meetings to attend to learn more about management and operations. And he wants to know whether he has to join any associations in order to attend such meetings.

The writer of that letter doesn't know it but he is just the man at whom many regional and some national conferences are aimed. While there are a great many operators and managers working in smaller towns, they are the hardest of all people to bring into attendance at conferences.

Meetings of national organizations and aviation conferences, long and well established, have little or no trouble getting strong attendance from larger cities and metropolitan centers. There is usually present a smattering of operators and managers from the smaller towns and cities, especially those within a fairly short distance of the meeting place. This appears to be due to two reasons: the first, time away from their small-staffed operations and the second, cost both in expense and in possible loss of revenue during any absence.

Those who prepare the programs for such meetings try year after year to get good speakers from the same category this operator-manager represents. There is good reason for this. These men form an important element of general aviation. Their problems are grassroots problems and in many cases are vastly different from those of the metropolitan folks. The fact is that only occasionally can these people be placed on the program of one of the national conferences for the same two reasons that limit the attendance from this segment of aviation.

When a handful of these people from the smaller towns do attend a national conference, frequently they complain that not enough attention is paid to the small town aviation problems and that too many of the speakers are from the big cities. So they don't come back. That is one of the most discouraging things about trying to develop a conference on airports and general aviation that will represent a true cross-section of the industry.



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- Positive braking action gives increased safety at all times.
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If program committees could get a sufficient number of speakers who truly knew the small town problems and the answers, there would still remain the problem of getting an adequate number of representatives of small town aviation to attend and listen to them and, above all, to join in the discussions.

Many people do not know that most aviation conferences, especially those dealing with airport management, operators' problems and methods, operate on very small budgets, cannot afford to pay speakers' transportation and expenses. There may be some complementary meals and free registration for speakers but for the most part the speakers, moderators and panel members pay their own way. The help they give is given from their interest in the industry's welfare.

The operator-manager who wrote us is likely to find he is more than welcome at most meetings dealing with the matters in which he has evinced interest. His selection of the meetings he should attend should be made after considering the available meetings of a regional nature in his area. These will consist of meetings of state or regional airport managers' organizations such as the Southeastern Airport Managers' Association, state and regional trades and operators' organizations and meetings of business and private fliers organizations. He should attend the last named type of meetings particularly to get your customers' point of view.

There are national meetings which would be of value both for the informative nature of the programs and for the business contacts you may make. No operator's business is confined to his town and county unless he himself makes it so. The next meeting of this type, according to the calendar of aviation meetings which appears in FLIGHT MAGAZINE, is the 28th Annual Business Meeting and Convention of the American Association of Airport Executives at Tucson, Arizona, April 16-20, 1955, and that's right soon after the publication date of this issue. On Sunday afternoon, April 17, there is, according to a tentative program we have before us, a session designed especially for men in the category of our inquirer.

That session includes "A Plane View of Plainview," by Claude Hutcherson, Plainview, Texas; "Small Town Air Fair" by Grant MacCurdy, Prescott, Arizona; "Cactus Root Operations" by Jack Cones, Twenty-Nine Palms, California, and a panel discussion of the problems of the small airport and aircraft operator. All of those promise good information. We've heard Claude Hutcherson and we can say his talk is worth dollars to the serious operator. Grant MacCurdy is another good speaker and although we haven't heard Jack Cones, we are mighty curious about "Cactus Root Operations." If you go, you should find

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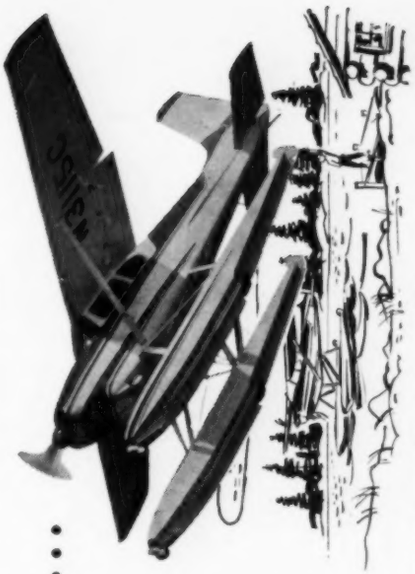

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plenty of meat in the panel discussion that follows these three talks. The value you get from that will largely depend on whether you, yourself, join in the discussion from the floor. Don't be bashful. Ask a question and the panel will do its best to answer.

Watch also for the fall program of the Norman Airport Conference at Norman, Oklahoma, early in October. The University of Oklahoma has sponsored jointly with various other organizations a long series of airport conferences and short courses intended to be of assistance to you.

For the most part, according to our experience, it is not necessary to be a member of these associations and groups in order to attend their conferences although their business meetings will probably not be open to you. We think, however, that you would find it to your advantage to take membership in one or two organizations which give you an answer to your needs. Don't be reticent about asking your program committees to include some of the subjects you feel are needed on later programs.

And do not undervalue the contacts and ideas that come to you from association with the people who attend such meetings. We have an old friend who somehow managed to drum up enough business at every aviation conference he attended to more than pay his expenses. He was a keen one to ferret out a prospect for a new plane.

Sea-Going Airport Manager

We had a long and entertaining letter from Lt. j.g. H. C. Godfrey just the other day. He used to be assistant airport manager at Galveston. He's on board the carrier "Shangri La" now. We'll bet he's storing up some valuable airport experience on that seagoing airport. Imagine working on an airport you can fall off of.

Manual Cites Airport Values

AN interesting "Airports Manual" has been published by the Air Transport Association, 1107 Sixteenth St., NW, Washing 6, D. C., as a public relations service. Not a technical treatise as its name may imply, it is an interesting, conversational summary of the airport's value to the community it serves —filled with many interesting examples and case histories. The ATA publication is useful to everyone interested in developing local airport public relations. Among the discussions in it are how the airport serves the public, the mails, business fliers, agriculture and emergency aid; how the airport increases civic wealth by expanding business, attracting new industry, offering employment and increasing real estate values; the airport's value in education and recreation, and how it fosters community prestige and civic spirit.

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JUST AMONG OURSELVES

(Continued from page 13)

sides or vertical surfaces of aircraft and fuselage sides of helicopters.

The idea might not be so bad for helicopters but we predict a flood of negative votes from business airplane owners who take pride in the physical appearance of their craft. What could be worse than painting huge numbers on the side of a beautifully-painted private ship? And what would such markings accomplish? In our opinion, absolutely nothing.

Let's write the CAB and protest this one!

STANDARD INSURANCE RATES

ADD two more names to the growing list of insurance companies who are willing to write most pilots life policies at standard rates. The newest to come through are Security Benefit Life of Topeka, Kansas, and Pan-Coastal Life Insurance Company of Mobile, Alabama.

In a few years, if we can maintain the present trend, rate-up for competent private pilots will be a thing of the past. According to National Safety Council figures, business aircraft had an accident fatality rate of about .53 fatalities per 100,000,000 passenger miles in 1953, while passenger autos and taxis had an accident fatality rate of about 2.9 for the same period. This makes business flying 5.8 times as safe as automobile travel.

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THESE are times of great aviation achievement. But we like to remember that behind every giant stride in air progress there has always been individual tenacity, determination and sheer personal devotion to flying by some man or group of men.

That's why we were made happy recently with the posthumous citation in a Legion of Merit Award by the Air Force of the Late Colonel William C. Ocker. He was the father of blind flying, overcoming ignorance, weakness and higher rank — at the cost of personal and family sacrifices — to give aviation one of its greatest advances.

His case — and we knew him and his struggle well — taught us long ago that nothing is impossible to those who are determined and strong of mind and devotion to ideals. ★ ★ ★

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